Into the Freezer --- and Out

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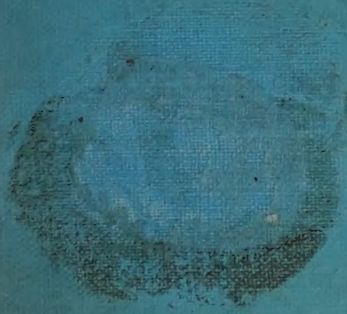

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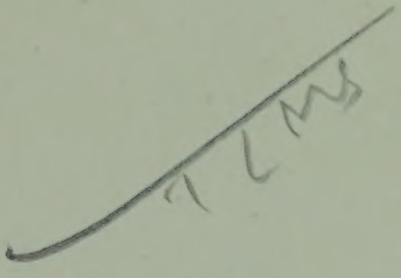

Into the Freezer
--- and Out

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By

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The fact that one of the authors of this volume is affiliated with the food and container research program for the Armed Forces should not be construed as an official endorsement of any commercial product or method of preparing such a product, nor do the views expressed necessarily reflect those of the Department of Defense.

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Foreword

Since the first edition of *Into the Freezer–and Out* went out of print in 1951, a large number of letters have been received, inquiring when a new edition would be available. Many of these have come from persons who have purchased new home freezers in the last few years. Because of the continuing demand, the book has been revised and brought up to date.

In the new *Into the Freezer–and Out,* special consideration has been given to the freezing qualities of the varieties of vegetables and fruits which have been perfected during the last seven years. The latest information concerning the freezing of cooked foods is presented, taking care to point out how to avoid difficulties which may result in inferior products. Many new recipes for cooking, and suggestions for using frozen foods of all kinds are presented. Special directions are given for preparation, cooking, and serving fish and game. Many suggestions are also offered which are of great value in the selection of a recent model of home freezer.

In rewriting the book, the frozen food experts, Donald K. Tressler and Clifford F. Evers, authors of *The Freezing Preservation of Fruits, Fruit Juices and Vegetables,* and two editions of *The Freezing Preservation of Foods,* have had the assistance of Barbara Hutchings Evers, formerly Director of Home Economics, J. H. Dulany and Sons; Home Economist for the National Association of Frozen Food Packers; and Home Economist in Charge of Precooked Frozen Food Section, Birds Eye-Snider Laboratories. She has added much to all of the sections of the book concerned with the preparation, cooking, and serving of frozen foods.

The authors hope that this new book will aid the vast numbers of men and women who freeze the products of their farms and gardens to produce better frozen foods and thus give their families greater enjoyment.

Donald K. Tressler
Clifford F. Evers
Barbara Hutchings Evers

March, 1953

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CHAPTER I

Warming Up to Freezing!

Frozen foods have come of age in this jet-propelled era. The commercial and home freezing of foods is now an accepted part of our everyday life—*a better way of eating and living for everyone.* But to keep the record straight, we cannot ignore the fact that it was only a little more than two short decades ago that the newly marketed frozen foods were receiving brickbats in place of compliments. The first years of this now adult enterprise were as anemic and sickly as any undernourished infant struggling for existence. The buying public just wouldn't take those first frozen foods seriously, and with good reason. Too often their purchases had been fraught with uncertainty and disappointment with poor quality products. Even at the low prices of those yesteryears, Americans were not having seconds . . . NO, THANK YOU! Here then, was a high wall of unfavorable public opinion that the growing frozen food infant had to hurdle.

Science became a fast friend to this new method of processing foods, and laboratory testing and experimentation soon put this child on the right road to a fruitful maturity. A brighter day began to dawn even through the darkness of a war-torn world. Our economic system felt the stress and strain of uncertain times, yet frozen foods made and held rapid advancements through each year . . . until now they manfully stand to be counted as a sizable segment of our country's food industry.

You may be amazed to learn that the freezing of foods is a

century-old practice in the far northern parts of the world. Freezing for these climates was a "natural" method of food preservation. Winter's ice and cold have been put to good use in keeping fresh products edible even in the more temperate climates—extending the summer's bounty many weeks further. So man really only borrowed from the rich lore of Mother Nature when he hit upon the idea of applying mechanical refrigeration to the freezing of foods.

Along our sprawling coastlines the freezing of fish has been a profitable business since the beginning of the Twentieth Century. Tons of delicate-flavored trout and whitefish from the icy waters of the Great Lakes, and an almost equal amount of the flavorful salmon and halibut came out of the north Pacific waters to compete with the always popular New England herring for freezer space. With an eye to future markets, exporters were busy shipping frozen salmon to Europe.

While processors were busy in the United States trying to improve the flavor and quality of frozen fish, Europeans were beginning to freeze small quantities of mutton and beef. Later, both at home and abroad, freezing preservation slowly began to enlarge its horizons to include the processing of poultry and eggs.

Plagued with all the pitfalls that beset any new undertaking, it cannot be denied that the quality of those early cold storage slow frozen products left a great deal to be desired. Off-flavors and rancidity were common faults, since so little was known then about the advantages of very low temperatures for freezing and storage.

Packing methods were still rather crude. Most foods, fish, fowl and even fruits, were all too often packed in large, heavy, wooden barrels or cases that only served to slow down the freezing process, and so contributed directly to the poor quality of the finished product.

At the corner grocery store the barrels of frozen products

were often defrosted in the heat of the noonday sun or by the waves of warm air blasting from those wonderful old pot-bellied stoves so common in those days. And, of course, the barrels were held without further refrigeration until the last herring or fryer was sold ... a most unhappy state of affairs.

In spite of all the dissatisfied consumers, the cold storage industry grew to mammoth size because of the economic need for preserving surpluses of seasonal foods for use in the metropolitan areas that were mushrooming then as they are to-day, all over this vast land. A world war increased the need and military demand for perishable foods to be transported greater and greater distances.

Even though the cold storage warehousing of foods made steady advances up to this time, the still inaccurate science of freezing foods remained pretty much where it had begun—still in the barrel stage.

It took an imaginative biologist and fur trader to give the first real impetus in 1924 to the experimentation and practical application of quick freezing to pan-dressed fish. Clarence Birdseye had spent several years in Labrador trapping for furs. It was here that he made a mental note of the fact that fish frozen in the extreme cold of the winter weather were much more palatable than fish frozen in the first coolness of fall. In fact, he believed that the winter-frozen fish approached, to a remarkable degree, the flavor and goodness of fish eaten the same day they had been caught.

Returning to this country, Birdseye found that the poor quality of the frozen fish then on the market was not to his liking. Those frozen fish of Labrador came to mind and the freezing field had found an advocate. Birdseye began to experiment to prove his theory that the quality of frozen foods for home consumption depended entirely on the proper selection, the speedy preparation and speedier freezing of foods,

and then the utmost care in storing the foods at temperatures low enough to retain their goodness.

Quick to recognize the advantages of pre-packaged frozen foods, Birdseye set to work and developed a machine to freeze small packages of foods in an hour or two. Compare this new freezing time to the oldfashioned method of freezing which required anywhere from 24 to 72 hours. What a terrific impact this made on the industry!

To-day there is agreement among the technologists of the frozen food industry that there are three distinct advantages of modern quick-freezing over the earlier slow-frozen foods. First, there is the advantage of the much smaller ice crystals which form, and so less damage is done to the cell walls of the foods that are frozen. Second, with the much shorter freezing time, there is less time for the separation of water in the form of ice, and as a result, less mineral salts are lost through seepage as the product defrosts. And a third, but important, factor is the rapid cooling of the product to temperatures at which bacteria, molds, and yeasts cannot grow, and so frozen foods are protected from even the threat of spoilage during freezing.

The man with an IDEA became the man with determination. Early in 1929 Birdseye set out to prove to a dubious world that not only fish, but shellfish, poultry, meats, fruits and vegetables could be sold to the public in small family size packages in a solidly frozen form IF the quality of the product was as good or better than that of the fresh products available in local markets. That "if," he kept insisting, meant the careful selection of only the very best raw products, quick handling in surroundings of kitchen-cleanliness, packaging in protective wrappings, and freezing them fast, FAST, FAST! Low temperature storage combined with proper merchandising methods completed this revolutionary theory of freezing.

It took a lot of drive and determination, grim determination

at times, to put these ideas across, and it took plenty of persuasiveness at first to get the housewives to even try the new frozen foods. Each sale proved our visionary biologist was right, for women returned again and again—each time to buy a larger quantity and a wider variety of frozen foods. One sales experiment alone in Springfield, Massachusetts, proved that FROZEN FOODS had already warmed the hearts of the first satisfied consumers.

At first, quick frozen foods made no tremendous splash in the food world, but still they received notable attention from food technologists. The National Canners Association, always on the alert for new methods of food preparation and processing, released a summary report by Dr. E. F. Kohman, covering their research on the freezing of vegetables and fruits in small containers. The report stated that freezing and thawing permitted enzymatic activity which resulted in off-flavors in the foods. This effect was so pronounced in the case of raw vegetables as to make them impractical to freeze. This same report went on to point out that when raw vegetables were properly trimmed and cleaned, and then were pre-cooked for a very few minutes, the frozen product when properly stored would retain its bright natural color and full natural flavor for six months to a year.

Dr. W. V. Cruess and Dr. M. A. Joslyn did a great deal of work about this same time on the freezing of fruits and vegetables grown and harvested on the Pacific coast. Their early work was done at the Fruit Products Laboratory, which later became the Division of Food Technology of the University of California. These two men also observed that it was essential to blanch vegetables before freezing, to retain their inherent quality of flavor and color. Every experiment on freezing vegetables has reaffirmed the need of proper blanching.

A research laboratory had already been set up by Birdseye Frosted Foods in Gloucester, Massachusetts, as early as 1929,

and the reports of the work done by the other groups only strengthened the results of experiments done there.

In spite of the talk of a "crackpot scheme" and an "impracticable venture" from many sides, commercially frozen foods secured a foothold and made steady gains in sales during the never-to-be-forgotten depression years of the early thirties. The buying public was slowly, but surely, warming up to freezing.

Consuming three meals every day, few of us ever give thought to the tremendous quantities of food either raised or purchased and used by individual families. Each one of us uses about one full ton of food a year. At this rate, a family of four would need to bring into their home nearly eight thousand pounds of food a year. The selection and preparation of these huge amounts of foods for the family places a tremendous responsibility upon the homemaker.

As a nation, our housewives have always been thrifty in the economy of the home preservation of food. Commercially frozen foods stimulated their interest, and where they had already mastered the art of pickling and canning, many women turned their minds and busy hands to the task of learning how to freeze foods at home for use on the family dinner table.

In 1938 there was such a big interest in frozen foods from both rural and urban communities that the manufacturers of electrical household equipment were busy designing better and bigger home freezers. The onsweep of a new world war prevented more than a few of these newest freezers from reaching the market.

Not to be dismayed by this lack of available freezing equipment for the home, the woman interested in freezing once again turned to the cold storage warehouses where for many years meats for family consumption had been stored in lockers from one butchering to another. These first attempts at home freezing of fruits and vegetables were a far cry from the quality

of the commercially frozen foods, which by now were being processed under the improved methods of quality control, using the latest and best food processing equipment.

Right here we wish to pay homage to the hundreds of sincere workers in various State Experiment Stations across the nation, who did so much, working alone and collectively, to bring the American public proven methods and facts on home freezing. They continue to serve us all, and so we wish to extend a sincere and hearty THANK YOU!

And to the ingenuity of the enterprising locker plant operators must go credit for expanding their services and equipment for freezing meats to include the freezing of a complete bill of fare. The earliest cold storage warehouses kept under their roofs primarily the perishable foodstuffs of the merchants. Later, this service was extended to farmers and hunters, in order to provide storage boxes for surplus meat and game. Soon, these boxes were built as cupboards and pull-out drawers, stacked one on top of the other in tiers. These cupboards or drawers made it much easier to store a wider variety of foods. Surplus butter, fruits, and vegetables now were placed for safekeeping by individual families in these refrigerated locker plants . . . a snug investment against hunger and waste.

Within the last few years more and more people in all sections of the country, from all walks of life and at all income levels, have been demanding and getting freezing facilities for their homes. A refrigerator without a separate freezing space and unit is now definitely *passé*. Refrigeration experts now see the market for refrigerators stabilizing while the market for home freezers is on a wide up-swing.

Farmers need and want adequate, low-cost freezing facilities to preserve their yearly supply of foods, except for staples and extras. Folks living in small towns like the idea of a home freezer at their finger tips for foods purchased from nearby farms in quantities which give them the advantage of a lower

cost per unit . . . and this lower cost means a whale of a difference in the family budget at the end of the year. The suburban commuter also looks at the home freezer from the standpoint of economy . . . savings in both time and money. And to the city apartment dweller, who is most often a working wife—frozen foods from her own freezer in the kitchen means that meal planning and preparation are no longer an added daily job . . . but a real downright pleasure, a chance to use her own imagination and ingenuity.

Out-of-season delicacies, tempting foreign foods, exotic fruit flavors, are available right now to every home with a FREEZER OF ITS OWN.

Best of all—and for all—the home freezer means foods of better flavor, appetizing appearance and nutritive value. And like all good members of a family group, the home freezer continues to serve the best interests of every member of the family. Dad proudly stores away that handsome trout that "didn't get away", mother is restfully prepared for holidays and unexpected company, free of last-minute meal-getting worries, sister and brother Joe know full well their favorite ice cream and apple pie is safely stored away within easy reach at a moment's notice. Yes sir, the whole family gives an approving nod to the silent family partner . . . . that lovable, that wonderful, that indispensable freezer.

Has America warmed up to freezing? IT SURE HAS . . . read any woman's page of any newspaper, pick up any popular magazine . . . and what will you find? The latest news is all about FROZEN FOODS and right under that byline is the HOME FREEZER . . . . the newest, the best thing yet in home appliances. Here's to your happy future with your home freezer! GOOD HEALTH! GOOD WEALTH!

CHAPTER II

Home Freezers Are a Good Buy!

Finding a good buy in this day and age is a rare occurrence. But if there is a good buy to be made anywhere, it is in your purchase of a home freezer. Apparently a great many people realized this fact in 1952 and purchased over a *million* freezers. To-day there are well over three million owners of home freezers from Maine to California. The Appliance Industry predicts that by 1960 home ownership of freezers will have expanded to well over the ten million mark.

Why buy a freezer? Well, there are several reasons . . . all of them good reasons. It can cut your food budget, provide you with extra special meals on short order; add unending variety to daily menus and so contribute to the nutritional betterment of the family. It will save you time, extra steps, and transportation—and a LOT OF WORK.

However, like all other household appliances, in order to get the most in service you must take time to learn all about the freezer and how to use it to the best advantage. To secure the fullest use of your new kitchen helper, you will find it is necessary to change or adjust a few of your kitchen work routines . . . . but the freezer will repay you with more leisure time to do all those extra things you have wanted to do for such a long time, e.g., sewing, letter writing, calling, reading, and shopping.

PLANNING—not day by day, but weeks ahead, will become the keynote to a new streamlining of marketing and meal preparation methods. More than ever you will become price tag

conscious in order to have the freezer make a real saving for the overall budget. And you will become insistent about the quality of the food purchased for freezer storage. Any new undertaking takes a bit of learning and there will be a few basic facts on freezing with which to get acquainted. Home freezing is much easier to master than the older method of preserving foods by canning—and a lot *cooler*. Information on packaging, freezing, and storing foods properly in your freezer will be of real interest to you. Then delve into the whys and hows of thawing and cooking frozen foods to get a good start on this easy way to serve wonderfully tempting foods. Unless you go overboard on buying freezer space, the family will have to decide almost the day the freezer is delivered to the door just how to use the storage space.

Don't forget to give real thought to the placement of the freezer in the home. Sit down right away and read the little book of directions which the freezer manufacturer has prepared to help you solve such problems.

Selecting just the *right* freezer to fit the family purse and food needs is a momentous decision. Talking with friends or neighbors who already own freezers may give you many useful hints and ideas and then don't be afraid to consult any reliable appliance dealer. Consulting free government bulletins ahead of time is also an excellent idea, (see appendix). There are dozens of makes, sizes, and styles available on to-day's market, so do a lot of looking and comparing before making that important final decision.

While there are many styles of freezers designed by each manufacturer, there are in general only two types of freezers for home use: the chest-type, sectioned off by baskets or dividers, and the upright-type, having the traditional refrigerator style shelves. Upright freezers usually occupy a smaller floor space and the packages of food are somewhat more accessible. If this type of freezer has coils in each shelf, the

food freezes faster because of good contact with the freezing unit. It is necessary, in the chest-type freezer, to place the packages to be frozen in a separate compartment or against the walls. However, since the chest freezer is boxlike you can store food in every corner and crevice. LOOK, LISTEN, and COMPARE, then decide which type freezer will best fit into your home and serve your freezing needs.

The *size* of the freezer you buy will depend completely on what specific uses you intend to make of this low-temperature refrigeration unit. Do you buy infrequently in large quantities or shop frequently? Is there a garden large enough to produce surplus foods? Is frequent entertaining a must? Are you busy in time-consuming activities outside the home and need to prepare family meals several weeks ahead? Just how many meals (per person) are served at home every month? It is a real smart idea to take inventory on these questions before deciding on the size. A slightly larger freezer than your present needs require allows for expansion in the future; the walls of a small freezer just won't stretch when you need to add those few extra pounds of food. Be sure to select a freezer of adequate size to take care of ALL your freezing needs.

The trend in purchasing is toward larger sizes in freezers. A small family which would have chosen a freezer of 7 or 8 cu. ft. capacity a few years ago, now generally chooses a 12 to 14 cu. ft. size. More is known to-day about the many convenient uses for a freezer. Thus, a larger size that holds larger stocks of food and a greater variety is likely to be more convenient than a freezer a few cubic feet smaller.

More upright freezers are being purchased to-day than formerly, probably because they take up less floor space than the chest freezers, and thus are especially in demand in the smaller homes being built to-day. Also, more manufacturers are offering upright types. An upright usually costs more than a chest model because more costly construction is required.

One reason a chest-type freezer can be built less expensively is that it opens from the top, and the refrigerating coils can be wrapped completely around the inner walls of the cabinet.

Many prospective freezer purchasers ask how long a freezer will last. The U. S. Department of Agriculture household equipment specialists report the life expectancy of the freezers on the market now is longer than those built some years ago. A good freezer should last 12 instead of 10 years, as was the estimate several years ago.

No mythical tales are told when stressing the ECONOMY of owning and using the home freezer. It is ridiculous, of course, to think the savings come automatically with the sales slip. It takes careful planning, buying to take advantage of specials and quantity discounts, and freezing in season to make a substantial saving in the *yearly* food allowance.

Freezing is so easy, a woman can preserve small quantities of surplus foods while she is preparing dinner. And by really being able to take advantage of bargain prices, every woman in the city can begin for the first time to increase her food savings by dollars instead of pennies.

If you live in a suburban area or smaller rural community, you may be doubly blessed with the freezer advantages if you grow some of your own vegetables and take advantage of special prices to fill out your quota of frozen food supplies.

No matter where you live, your table will be enriched by better food and by many foods heretofore little known, or unknown. With freezing, even the most perishable foods can be transported anywhere in the world. Some day you may be able to serve palm hearts or chuchu as the vegetable with a choice roast of beef; and you may also taste—without ever leaving home—the true fruit flavors of tree-ripened tropical fruits most of which, outside of bananas, are known only to a few world-wide travelers or to those living in the semi-tropical sections of this country. There is the potent flavor of guavas, the deli-

cate flavor of mangoes, the strange flavor of avocados. Incidentally, you can freeze and serve avocados as a snack dip or as a dessert just as they do in Brazil. They are simple to prepare and are delicious! Look on page 129 for detailed information on how to prepare avocados, then try it yourself. You are sure to like frozen avocados, as they are a most delightful eating pleasure. No wonder this fruit is a Brazilian favorite.

One of the best things about freezers is that they are for *everybody,* not just the privileged few. Their cost is only slightly more than the cost of ordinary household refrigeration, comparing cubic foot storage space. Upkeep costs, too, are not excessive because years of refrigeration manufacturing experience are behind the refrigerating principles of the home freezer. The operating cost will not be great, since a freezer uses little more electricity than a household refrigerator of comparable size.

Your freezer *will pay for itself.* And this is not just tall sales talk, nor theoretical paper work. It has actually been proved by those families who have owned a freezer for a year or more. They report savings that vary from around $50 to $100 and upwards per year. But the most significant thing about their reports in the majority of cases is that while they are grateful for the dollar-and-cents savings made possible by their freezer, what really impresses them and makes freezer ownership downright thrilling is that it affords them *better eating.* At the same food costs, or less, you can eat *more* and *better* meats, fruits, vegetables, and delicacies!

THE STORE THAT NEVER CLOSES

The one person who appreciates the freezer above all others is mother. For her it does many things besides provide her family with more and better food: it is her very own grocery store stocked with foods of her own choosing; her grocery store packed with foods that are all ready for the table or range; her

store that's never too busy to wait on her promptly; her store that knows no after-hours or Sundays.

In return for these grand services, of course, payment must be rendered in the form of the work it takes to get the freezer full and keep it under good management. Even though the procedure for freezing foods is easy, it does involve work, but mostly table preparation work that would have to be done anyway; and most mothers are such good managers they usually can get the family to pitch in and help on the food-freezing tasks when large quantities are to be frozen.

Or, if mother hasn't the time or the inclination to freeze foods on a wide scale, she can pay to have the grocery store of frozen foods brought to her door by means of a refrigerated truck loaded with all kinds of good things to eat which she can simply transfer to her own home freezer for storage. Department stores and food retailers all over the country are establishing frozen food delivery routes in the cities and surrounding areas which they serve, so that anyone with home freezing facilities may take advantage of such a service to buy commercially frozen vegetables, fruits, meats, poultry, fish, shellfish, cooked foods, and baked goods in quantities which are delivered to the home. A customer merely notifies the store in advance the kinds and quantities of food wanted; her order will be left as the refrigerated truck covers its regular route.

IF YOU HAVE NOT YET PURCHASED YOUR FREEZER

In case you have not yet purchased your freezer, you may like to know something about the kinds and types of freezers offered, what good construction features to look for, what operating costs are likely to be, etc., so you can understand more of what the dealer in home freezers will talk to you about when you go to see him. In turn, you will be able to ask helpful questions about his particular manufacturer's product if you are acquainted with some general freezer information.

The freezer you buy will have its problems of demand and supply pertaining to your particular family needs. There are questions facing each family who are prospective owners: Will your freezer be stocked with home-grown and home-frozen foods in large part, or will you depend largely upon commercially prepared frozen foods? What kinds of food will you want your freezer to furnish? How many persons will it have to supply such foods for? How much food will this amount to? For how many months of the year will you depend upon foods from your freezer? And what size freezer will it have to be to accommodate this food traffic?

To predetermine the answer to each as nearly as possible before purchase is a matter of major importance so that the greatest satisfaction may be derived from your purchase, or investment. The best help which can be given the reader is to draw some theoretical case histories based on pounds of food which can be stored per cubic foot of freezer space and on the purposes for which various types of freezers have been designed.

Case No. 1—If you are a family living in a small town or city, and have no means of procuring home-grown produce for freezing, or do not have time to devote to home preparation for freezing except occasional small quantities, a small freezer may serve your purposes, or you may wish to invest in a refrigerator which has a separate freezing compartment. A 4-cu. ft. freezer will accommodate from 140 to 180 pounds of foods when full. It is used in the main for storage rather than freezing, although it can be used for freezing small quantities. Refrigerators with separate frozen food compartments will hold an ample supply of foods for ten days to two weeks, depending upon whether or not the supply is to furnish all fruits, vegetables, and meats consumed. A 3- or 4-cu. ft. freezer will supply the complete preserved food requirements for a family of two for a much longer period. Furthermore, almost every size kitchen will accommodate such a small freezer for it takes up no more room than the

ordinary floor space of a kitchen storage cabinet. The top is of right height also to be used as a supplementary work surface.

Case No. 2—If you are a family of 2 to 4 and do not have access to any home-grown foods and plan to use your freezer for the storage of commercially prepared foods bought by dozen or half-dozen lots, and wish for small additional space to freeze occasional extras such as baked goods, cooked foods, leftovers, etc., a 4-cu. ft. freezer should be of sufficient size to accommodate your needs. This size will accommodate a full three months' meat supply, or an entire month's supply of fruits, vegetables, and meats.

Case No. 3—If you are a family of 4 and have a garden which can produce enough surplus to supply vegetable needs throughout the year which can be frozen for use during non-productive months, a 6-cu. ft. freezer accommodating from 210 to 270 pounds of food will give you sufficient freezer space for much of your home-grown garden produce, plus a little extra space which can be utilized for freezing and storing small quantities of fruits and meats, if desired. In case meats can be purchased directly from producer, or commercial or wholesale cuts can be purchased, then it is better to have also enough freezer space to store a large quantity of meats, and a 9-cu. ft. freezer may be the better size to buy, giving additional space for about 100 pounds of food.

Case No. 4—If you are a family of 3 to 5 and will want the freezer to be the main source of supply for a considerable proportion of your perishable food needs, some of them home-grown and some purchased, from 9 to 12 cu. ft. storage space will be needed for such a food supply, accommodating up to from 300 to 500 pounds of food.

Case No. 5—If you are a family of 4 to 6 and live in a small town or suburban community and will need the freezer to supply all your preserved fruits and vegetables, and part of your meat supply, from 15 to 24 cu. ft. of freezer space should

accommodate such foods; if you wish the freezer to supply the complete meat needs as well, at least 24 to 36 cu ft. of freezer space is required.

Case No. 6—If you are a family of 6 to 8 and want to plan a complete freezer program for all fruits and vegetables, when the fresh is not available, and a continuous meat supply is desired, don't skimp on purchasing a good size freezer. From 36 to 50 cu. ft. (or even larger) should be the smallest size freezer to consider buying.

Case No. 7—If you are a family of any size who lives on an acreage where all your fruits or vegetables are grown and meat animals are raised to furnish the full year's food quota, you may wish to plan for "walk-in" cooler and freezer rooms which will take care of all your refrigerated food needs for freezing, for frozen storage, and for cool storage. This type of freezer would include as much as 160 to 760 cu. ft. of space, approximately one-third of which would be for freezing and storage. The cool storage space would accommodate the chilling of meat carcasses, root vegetable storage, cool storage for fruits which are sometimes cellar stored, cool storage for dairy products, etc.

WIDE VARIETY OF FREEZER TYPES AND SIZES

The larger walk-in freezers are usually custom or home built so they can fit the particular needs of the household or farm operation. Some of the prefabricated walk-in rooms are available in expandable sections of 100 cu. ft. which can be added to the original 160-cu. ft. unit.

Because of the varying needs for freezers on the farm, there are a few families who might prefer to build whatever size farm freezer is needed. Very useful information on construction of farm freezers will be found in the technical book on freezing by Donald K. Tressler and Clifford F. Evers, "*The Freezing Preservation of Foods*" which is also published by The Avi Publishing Company.

But for all intents and purposes, the home freezers manufactured to-day represent such a wide range of sizes and use features that only in rare instances will it be desirable to prefer a home-built unit. Aside from the cost of construction materials, it takes good construction to build a freezer that will accurately maintain a controlled temperature, and that will operate efficiently at all times.

Besides those cabinets or chests which are bona fide home freezers, there is the household refrigerator designed primarily for the storage of fresh foods, but which has a low-temperature, frozen food compartment varying in size from 1 to 2 cu. ft. or even larger. All mechanical refrigerators now in use have ice making compartments which may be used for storing very small quantities of frozen food which keeps in fairly good condition for a week or two. The new "dual temperature" refrigerator combining fresh food refrigeration with frozen foods storage is in the main merely an enlargement of this principle with one very notable exception: the refrigerator built to combine frozen food and fresh food storage will maintain the proper temperatures in both sections of the cabinet. The frozen food compartment will store frozen foods as efficiently as any home freezer, whereas the freezing compartment of the ordinary mechanical refrigerator does not have a low enough temperature to do this.

The home freezers other than the dual temperature refrigerator and the custom- or home-built walk-in freezers, can be classed in about six categories: (1) Small top-opening or chest-type freezers of from 3 to 5 cu. ft. capacity. (2) One-compartment chest-type freezers of medium size, perhaps of from 6 to 10 cu. ft. capacity. (3) Chest-type top-opening freezers having 2, 3, and 4 compartments and a capacity of from 8 to 50 cu. ft. (4) Side-opening freezers which resemble the conventional household refrigerator in appearance. These freezers usually have refrigerated shelves; they vary in size

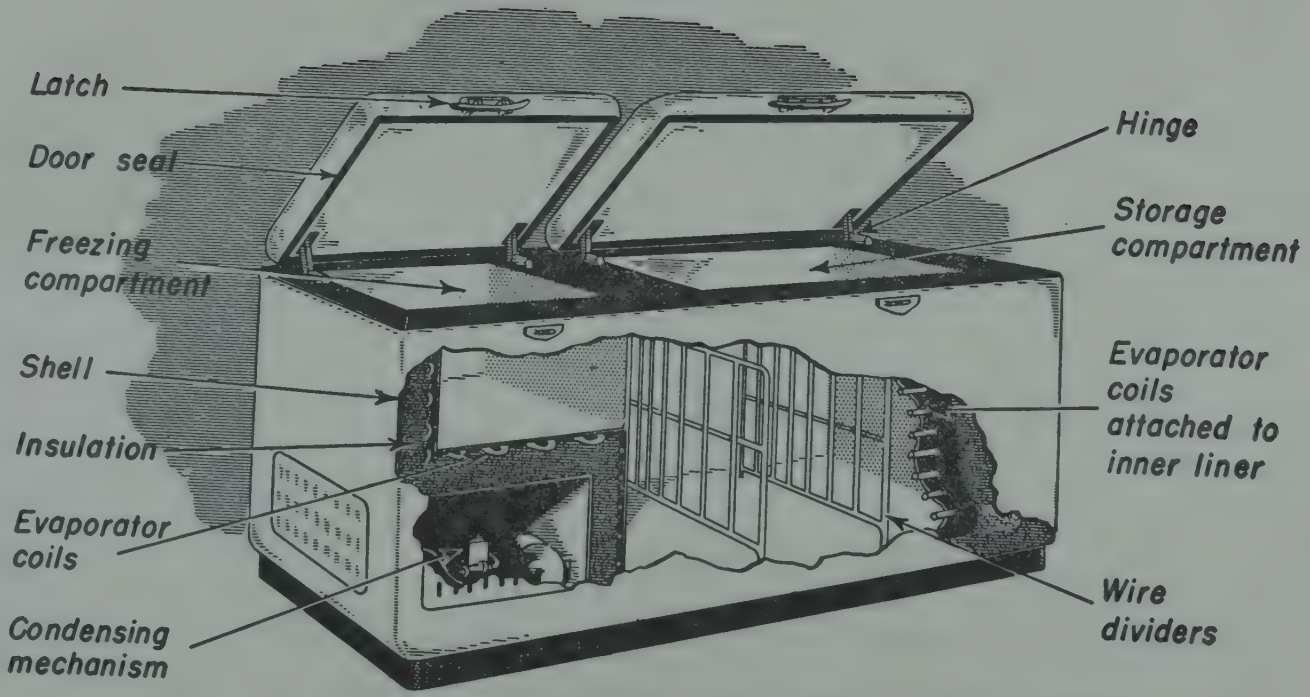
from 6 to perhaps 40 cu. ft. in capacity. (5) Side-opening combination freezers and coolers having approximately the same size compartments for fresh and frozen food storage. (6) Large pre-fabricated walk-in freezers and combination walk-in coolers and freezers.

Aside from the size of freezer needed, the next most important question a family must decide is whether a top-opening chest-type freezer or a side-opening freezer with shelf or drawer arrangement will best serve their purposes. (See illustrations between pages 24 and 25 showing different models of both types.) Each type has certain advantages.

The chest-type freezer with one or more compartments will store a somewhat greater quantity of food than a side-opening freezer of the same interior dimensions, since it contains no shelves or drawers. Less cold air "spills" out of the top-opening chest, and the doors of the top-opening type are less likely to give trouble than doors of some makes of side-opening freezers.

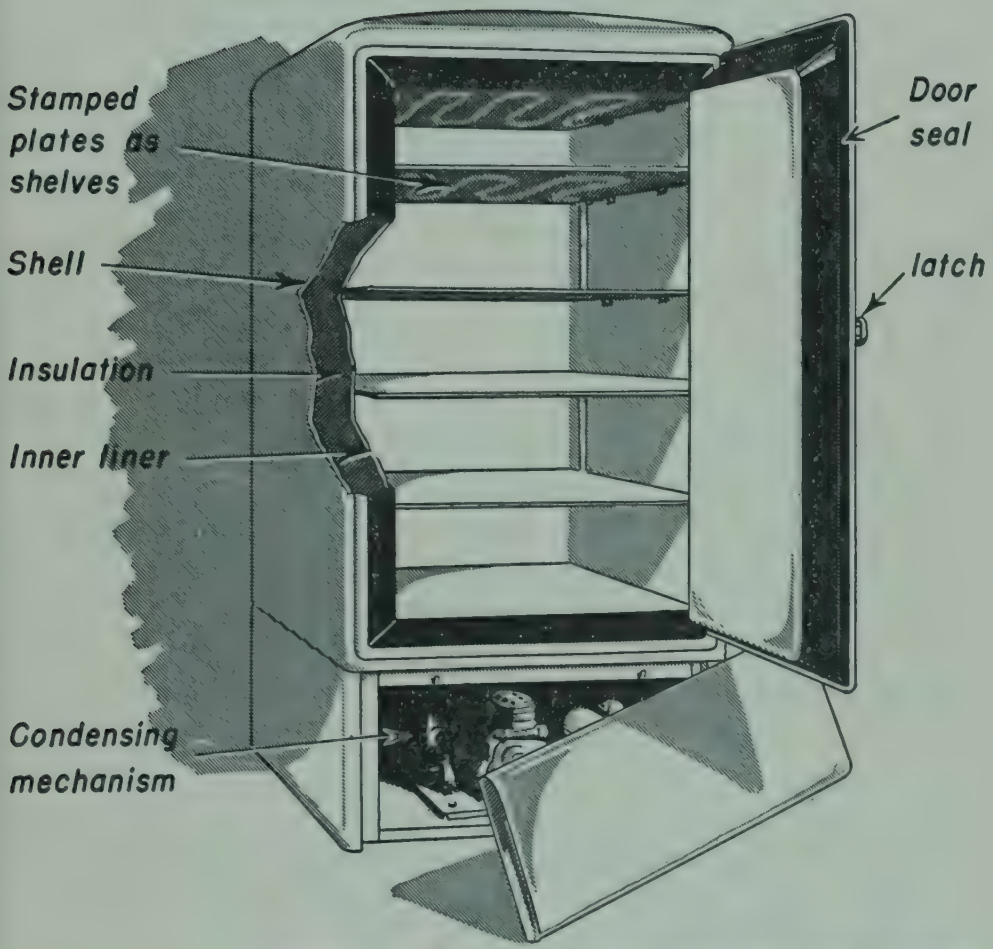
On the other hand, reaching to the bottom of a chest-type freezer to place or remove packages may be a rather difficult problem for someone who is short and does not have a long arm-reach. The side-opening type of freezer stores packages within easier arm's reach at a level that requires little stooping or bending over. Also, when the shelves of side-opening freezers are refrigerated, there is a larger proportion of freezing surface on which foods can be rapidly frozen than in the chest-types.

Both type of freezers have one common disadvantage: it is sometimes hard to find the package one is looking for in a freezer full of food, a great many of the packages looking alike or similar in size and shape. To facilitate ease of removal, wire baskets or racks have been designed for chest-type freezers into which related or classified foods may be arranged for ready identification. In the side-opening type with slide-out drawers this problem is also simplified.



Courtesy of U. S. Bureau of Human Nutrition and Home Economics.

A cutaway picture of a typical chest type freezer indicating the location of the various freezer parts. Chest freezers are generally counter height, which provides additonal work space in the kitchen, pantry or utility room.



Courtesy of U. S. Bureau of Human Nutrition and Home Economics.

A cutaway picture of a typical upright type freezer showing the construction features. Upright freezers will occupy less floor space, but room must be allowed to swing the doors open.

FREEZER CONSTRUCTION FEATURES

Insulation—Refrigerating engineers have almost unanimously agreed that 4 or 5 inches of cabinet insulation is best for home freezers. If insulation is less, there will be too much heat transfer through the walls of the freezer. As a result of this, the motor will keep running a great deal of the time. Besides consuming too much electrical power, the freezer will "sweat," collect moisture on the outside of the cabinet because of condensation of moisture from the air when hot air cools. Insulation of thickness over 5 or 6 inches not only would make the appliance much more costly to you, but would at the same time cut down on the amount of cubic foot storage space available in the same size cabinet; or such thick insulation would make the freezer so wide that it might be impossible to get it through an ordinary door for installation in the home.

Lid Construction—Sweating of a cabinet is also caused by poor lid construction which gives neither adequate insulation over the top of the cabinet in chest-types or over the front of the cabinet in side-opening models, nor a good seal around the opening when closed. The best lid construction is a latching type which compresses a gasket at edge of door or lid to create as nearly a perfect seal against leakage of air as possible. If lids or doors are poorly constructed, frost inside the freezer will collect more rapidly, and the few inches of cabinet space adjacent to door or lid will not be maintained at correct temperatures. This is especially true of chest-type cabinets with poor lid construction.

Cabinet Materials—The materials of which the cabinet is constructed should be corrosion-resistant, durable and easy to clean.

Freezing Facilities—Freezing of foods can be done in any home freezer whether or not the cabinet has a special freezing compartment, although if you plan to freeze most of your own foods a freezing compartment is important. But if sharp freez-

ing facilities for freezing large quantities at one time can be used at a local locker plant, the special freezing compartment is not too important. Fast freezing in such compartments is made possible in many home freezers by a separate temperature control which can be set to −10° to −20° F., or lower, when freezing foods. Reducing the temperature of the freezing compartment is only effective when the freezer has a powerful enough unit to maintain the low temperature throughout the freezing period. When not freezing foods, the special freezing compartment can be used for storage.

Besides low temperatures for freezing, faster freezing in some cabinets is obtained through large areas of special metal freezing plates on which the packages of unfrozen food may be placed. Metal is an excellent conductor of heat. Many of us learn this accidentally by picking up a hot pan.

Temperature Control—A good freezer should have good temperature control, one that will constantly maintain the temperature at which it is set within two degrees each way, when not freezing foods. Of course, when foods are placed in the freezer for freezing, there will be quite a fluctuation of temperature, but not enough to affect the storage of frozen foods, unless a full freezer load is placed in the cabinet repeatedly every few days or so over a long period of time.

Warning or Alarm System—Some cabinets come equipped with an alarm or warning device; in others it may be purchased as an accessory. In either case it is very important to have the freezer equipped with an alarm or a thermometer which will indicate when the cabinet temperature gets too high because of mechanical or power failure. The alarm system should be operated preferably by batteries so that it will operate even if the freezer is accidentally disconnected or the main power supply fails. Accidental disconnection of the freezer is more likely to go unnoticed than a general power failure, since a power failure causes general trouble and will more often than

not be noticed quickly. An efficient alarm system will safeguard large quantities of food.

WHAT ABOUT HAZARDS OF POWER FAILURE?

Power failures due to mechanical failure of the freezer, or a break in the current from the service company because of trouble or a storm, are not nearly the hazard one would think offhand.

Because of the thick insulation on a home freezer, foods do not thaw out quickly, especially if the freezer is packed solidly full of frozen foods. However, if the freezer contains only a few packages of food, there will be relatively little "hold-over" of refrigeration and packages are likely to thaw quickly.

Some persons feel that power failures are very dangerous and many can cite examples of foods spoiled because temperatures rose so quickly inside the freezer cabinet when power failed. This, in most instances, was due to the fact that the freezer, having no alarm or warning system, started to get warm long before its owner noticed the packages becoming soft, for it is only when packages in a freezer get to the softening-up stage that the average person can detect warming of the interior of the cabinet due to power failure. Then sometimes it is too late to try to save large quantities of food.

In tests on home freezers, it was found that food in a well-filled 4-cu. ft. freezer did not thaw to any considerable extent until approximately 72 *hours*—three days— after the current was off; and the upper layer of packages which would thaw first, did not rise above 32° F. until after 96 *hours*—four days! The bottom layers of packages required more than five days to thaw. These tests were conducted in hot 80° F. summer weather.

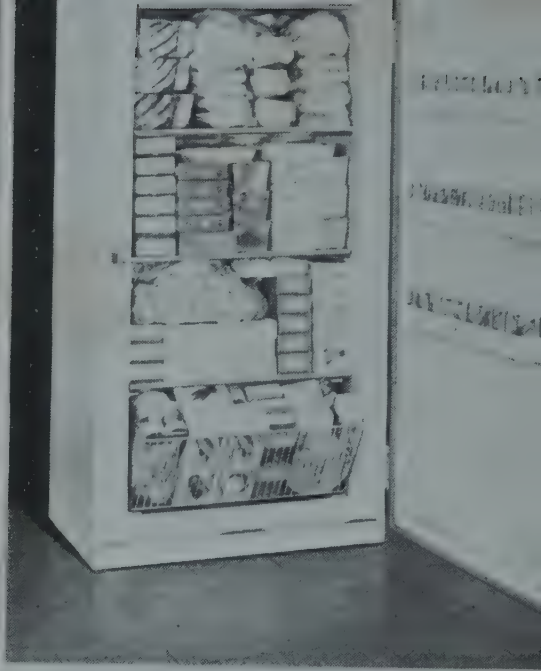
Besides the amount of food in a freezer, insulation and the temperature of the weather will affect thawing in a cabinet when power fails. But, in a large cabinet (from 12 to 35 cu. ft., or more) which is nearly full of frozen foods, it is doubt-

(Top Left) This 7 cubic foot General Electric freezer chest holds up to 245 pounds of frozen foods; uses only two more inches of floor space than a standard refrigerator. Equipped with temperature indicating light and automatic interior light.

(Top Right) Largest chest model in the 1953 freezer line by Crosley has a capacity of 20 cubic feet and holds 700 pounds of frozen foods. Features two-position temperature control, signal light, self opening counterbalanced lid, automatic interior light, stacking baskets, removable dividers, and pastry rack.

(Bottom Left) Steinhorst's 16 cubic foot chest type freezer features three separate compartments equipped with handy storage baskets, and holds 560 pounds of frozen foods. Exclusive Steinhorst "Dutch" freezer plates hold the cold even over extended periods of power failure.

(Bottom Right) A 12 cubic foot freezer with capacity for freezing and storing approximately 420 pounds of food. This Westinghouse model is only 32 inches wide and features a pastry rack, slide-out shelf for fruit juices and small cartons. There is a Roll-Out freezer drawer at the bottom.



(Top Left) Victor's Upright Quickfreezer occupies less than 1 square yard of floor space. This 18 cubic foot model stores approximately 600 pounds of frozen foods. Four insulated doors used as shelves when loading or unloading are featured.

(Top Right) More space for frozen foods in less floor space is featured in this 11 cubic foot upright model by Gibson Refrigerator Company. The door racks hold almost half a case of frozen juices.

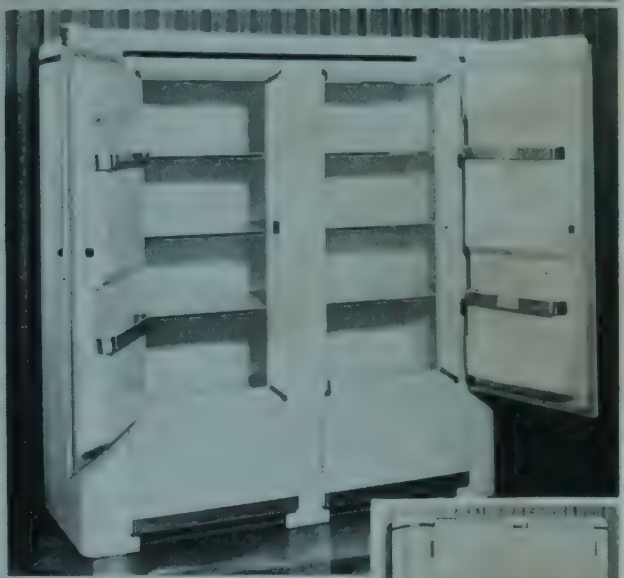
(Bottom Left) The new Norge 11 cubic foot Upright Freezer features 5-position Adjust-A-Shelf, and two handy Roll-Out baskets to keep small packages instantly available.

(Bottom Right) 1953 Upright models of HARDER-Freez home freezers feature many new conveniences including Chalk-up Chart, Portable Pie-Tainer, Packaging Pantry, and Jiffi-Juice Racks. Pictured is 25 cubic foot size.

(Top Left) Kelvinator's new 18 cubic foot Upright Freezer has a capacity of 630 pounds of frozen foods and features four separate compartments, each having its own pair of center-opening inner doors.

(Top Right) For the first time—an upright Cold Spot freezer available in 11 and 18 cubic foot sizes. This model features non-sweating freezer walls.

(Right) A fine example of the larger size two-door upright freezer presented by Coolerator. This freezer is 32 cubic feet in size and holds about 1120 pounds of frozen foods.



(Left) Philco's new 18 1/2 cubic foot home freezer holds 650 pounds of frozen foods. The new Philco freezer sharp freezes at 15 degrees below zero.

Greatly reduced operating costs, lower freezing temperatures, and more convenient frozen food storage facilities are provided by new Frigidaire Food Freezers. The model shown here with 9.2 cubic feet of storage space will store up to 322 pounds of frozen food.

A Wilson Zero° Safe Freezer Chest which has an automatic warning signal: Blue light on front of chest glows continuously during satisfactory operation. "Lights off" indicates temperature rise above 12° F.—or power failure.

Amana's big De Luxe chest-type 14 cubic foot freezer holds a full 490 pounds of frozen foods. To right of photo may be seen the Amana 18 cubic foot upright freezer which holds 630 pounds of frozen foods.

ful whether foods would even begin to spoil in less than five days after current is cut off, even in very hot summer weather. From three to five days is usually sufficient to mend the cause of the trouble.

During power failures, do not open doors or lids any more than is absolutely necessary. Should the trouble last longer than from three to five days, a quantity of Dry Ice placed inside the cabinet right on top of the food will keep it at a low temperature.

Most home freezers are well built and give good service. But it is wise to make frequent checks on the freezer thermometer to be sure the appliance is in good working order. Note excessive or noisy running of the motor, or no running at all; then call a service man immediately. Both city and rural electric power systems offer good service. However, no one can guard against accidents such as an occasional bolt of lightning hitting the transformer or an unusual storm that brings down lines and also ties up transportation. Most often, however, food thaws because the freezer stops operating when families are away from home when the trouble starts, or they neglect to check on a freezer in the basement.

Several makers of home freezers are providing insurance for loss of food in such an event. Sometimes the policy covers loss of food only, when the freezer itself breaks down. Other policies cover both freezer break-down and non-operation due to power failure. Any homemaker who keeps a large quantity of food in the freezer may well consider the money loss when a freezer is out of order for several days. The cost of insurance for such loss depends on the amount of food insured. Check with your dealer for these details.

WHAT TO DO WITH THAWED FOODS

Let us assume that during the absence of the owner, a home freezer has warmed up to the point where some of the food has

thawed completely and the remainder is partially thawed. What should be done? Should all of the food be thrown away? Before making a decision about such matters, the condition of the food must be determined.

Although fruits show the effect of thawing more quickly than any other foods, there is little or no danger from food spoilage organisms from eating spoiled frozen fruit. When fruits spoil, they ferment rather than putrefy. Although their flavor will be ruined, they will not become poisonous. Even if they are badly fermented, the worst that can happen is that the juice will become about as intoxicating as new wine. Partly thawed peaches, apricots, plums, and sweet cherries oxidize and become discolored and their flavor deteriorates. But there is no reason why thawed fruits should not be refrozen, since they are not likely to ferment until their temperature rises above about 40° F. If the quality is doubtful and you do not wish to serve them as dessert fruits, they can be made into jams, jellies, and preserves.

Unlike fruits—meats, poultry, and fish and also non-acid vegetables are subject to putrefactive spoilage. So it is necessary to examine each package carefully before determining what should be done with these thawed products. If the packages still contain some ice crystals, they may be refrozen without risk. If the products have completely thawed, the temperature of each is the best guide to its condition. If the temperature of meats, poultry, and fish is under 50° F., in all probability the food is still in good condition. Spoilage may usually be detected by the odor of the food, although spoilage is not easily noted in this manner in vegetables or shellfish. Bacterial action is relatively rapid in vegetables and shellfish at temperatures of 50° F. or over. For these reasons it is unwise to refreeze either vegetables or shellfish which are completely defrosted (packages no longer containing any ice crystals). If meats and poultry still have a fresh odor and do not smell

sour, they may be cooked and eaten without risk. However, as a precaution, one should cook them thoroughly rather than eat any such foods rare.

If the quantity of fruits, meats, poultry, and fish thawed accidentally is so great they cannot be consumed promptly, they may be refrozen provided the temperature of the food has not gone above 50° F.

Be careful in refreezing foods which have been thawed and do not attempt to refreeze more foods in your freezer than the manufacturer stipulates, otherwise refreezing will take place so slowly that the foods will spoil before they are refrozen. Most home freezers have a limited freezing capacity, and foods packed solidly in a home freezer will freeze very slowly. It is wise in refreezing any quantity of foods to take them either to a locker plant or a commercial cold storage for refreezing. After they have been rapidly frozen, they may be returned to the home freezer when the temperature of the cabinet is once again operating at 0° F. storage temperature.

If in doubt about any thawed foods, it is better not to take any chances with them, but to discard them or use them for the feeding of domestic animals.

USE AND CARE SUGGESTIONS

PLACE the freezer so that it is convenient for use, but at the same time do not place it adjacent to the range in the kitchen nor where the sun will shine directly on it. If the kitchen is large enough, of course this is the most convenient place for the freezer. If your kitchen will not accommodate the freezer, an enclosed back porch, the basement, an attached garage, or even a separate outbuilding in some cases, can serve as a convenient location for the freezer.

FOLLOW the manufacturer's directions carefully in determining how much food to freeze in your freezer at one time and

be careful not to overload the freezer with more unfrozen food than it will safely accommodate.

CHECK thermometer readings of the inside of the freezer cabinet daily so any failure of power supply or mechanical trouble will not go unnoticed.

KEEP all surfaces of the freezer spotlessly clean by occasionally washing the outside surface as you would the enameled surface of your refrigerator, then use a creamy wax polish to protect its finish.

DEFROST the freezer before more than a half inch of frost forms over a considerable area of the refrigerated surfaces. Once a year is often enough, but in humid surroundings, or if the freezer is frequently opened, the job may need doing two or three times a year. It is easiest to defrost when there is relatively little food in the freezer. If the freezer is not too full, move food packages from one part of the freezer to another as you work—rather than taking them out.

Remove dry frost by scraping, with the freezer in operation. There are special scraping tools sold for the purpose; or a broad, or sharp-edged wooden or plastic paddle may be used. Catch frost on papers, cardboard, or plastic cloth as it is scraped from vertical dividers and walls; or collect it from the bottom with dustpan and whiskbroom. If pans and broom are kept cold, frost will not melt from contact with them.

When ice is mixed with the frost or a more complete cleaning job is needed, remove food packages and disconnect the freezer. Place the food packages on trays or in baskets that have been well cooled in the freezer. Stack packages compactly and cover with chilled newspapers, blankets, or other insulating material and proceed as follows:

Scrape as much frost as possible from the surface, to lessen need for mopping up melted ice. If the freezer has a drain, melting may be speeded by running cold water over the refrigerated surfaces—never use hot water because this would

cause difficulty when starting the compressor again. An electric fan may be used to help melt the ice more quickly. If the freezer is upright, set the fan on the floor or a chair, so as to blow air directly into the freezer. If the freezer opens on top, the fan may be placed on the bottom of the compartment and tilted upward slightly, to blow against a side wall; or the fan may be put on the freezer and tilted down to blow into it.

As the ice and frost melt, wipe up the water with cloths, and clean the non-refrigerated surfaces of the freezer. When defrosting is completed and the freezer clean, connect the freezer and let it run half an hour or so to lower the temperature somewhat before replacing the food. Take time, if possible, to make an inventory while returning food packages to the freezer. It is a wonderful opportunity to bring older packages to the fore, and mark them plainly for first use.

REMOVE stubborn freezer odors after defrosting. It doesn't happen often, but once in a great while a home freezer may develop an unpleasant odor resulting from food spoiling due to a power cut-off. To remove odors from the freezer, the following suggestions are offered: first, wash all the interior surfaces of the freezer with plenty of soap and water. Then go over them with a cloth wrung from clear water. Wipe dry. If this does not dispel the odor, wash the freezer with soda water, using 1 teaspoon baking soda to each quart of warm water. If the odor persists, try vinegar, using about 1 cup to a gallon of water, or household ammonia in the same proportions.

If none of these suggestions prove effective, don't give up. Try using heat to eliminate the odor. To do this, put something like a toaster or electric heater inside the freezer to heat it up. Then use an electric fan a couple of hours to blow the air out. Activated charcoal, put into the warm freezer, will absorb odors released by the heat. Or a commercial, wick-type air freshener may be put into the warm freezer for the same purpose. When the odor has been removed or reduced to

where it is of no consequence, give a final washing to the inside surfaces with soda water. Activated charcoal left in the freezer for a while will pick up any residual odor. If only traces of the odor remain, this is not likely to affect food frozen and stored in the freezer if care is taken to wrap the food securely.

PROTECT packaging materials. For sanitary packaging of frozen foods, all wrapping materials must be kept protected from dust and insects. Bags or rolls of wrapping materials that may become brittle, such as Cellophane and Pliofilm, keep best in a place that is cool and not too dry. Fortunately, if these materials do dry out, they may be restored by placing them in a household refrigerator for 48 hours before using, or between two damp towels for several hours.

Plastic or glass containers need a thorough washing and rinsing before use. Many homemakers who have stocks of glass canning jars would like to use them for home freezing, for economy and convenience. Canning jars are quite durable at freezing temperatures and these jars can be used to hold fruits in syrup or sugar for freezing, also dry-pack vegetables, meats and poultry, and even apple juice. But there is considerable breakage in freezing brine-packed foods in glass jars.

When using glass jars for freezing allow enough headspace for the food to expand—1/2 inch for pints and 1 inch for quarts. To prevent breakage, jars should stand upright and be placed in the freezer a few at a time with space around each for circulation of air and even freezing. The least breakage occurs in jars placed at the center of the freezing compartment away from the freezer plates. Thawing, as well as freezing, should be even. Slow thawing in the refrigerator is recommended as best, especially for fruit. For more rapid thawing, place the jar in cold, slowly running tap water.

CHAPTER III

The Modern Locker Plant at Your Service!

In a true sense of the word, to-day's locker plant operator is a pioneer who has hewn for himself a permanent place in the community *because* he saw where he could render the community a real service and set about doing it in the right way.

The locker plant business started long before any one even dreamed of making home freezers. In so far as can be determined, the first locker established for rental was in 1908 when the Chico Ice and Cold Storage Company, Chico, California, offered cold storage space for storing meat and other products in boxes. Although special refrigerated rooms with regulation lockers built in tiers were developed and offered for rent through subsequent years, it was not until the locker man discovered the value of his services in caring for foods as well as storing them, that locker plants started springing up all over the country. Between 1938 and 1940 the number of locker plants in operation in the United States was more than doubled, and on August 1, 1940, there were 2,870 locker plants scattered over 44 states. In the next five years, despite curtailed production facilities during the war, locker plants again more than doubled in number, this time over all of the 48 states. To-day there are approximately 11,500 locker plants serving the American people.

The future of modern locker plants looks bright and promising. While they haven't as yet attained their ultimate goal,

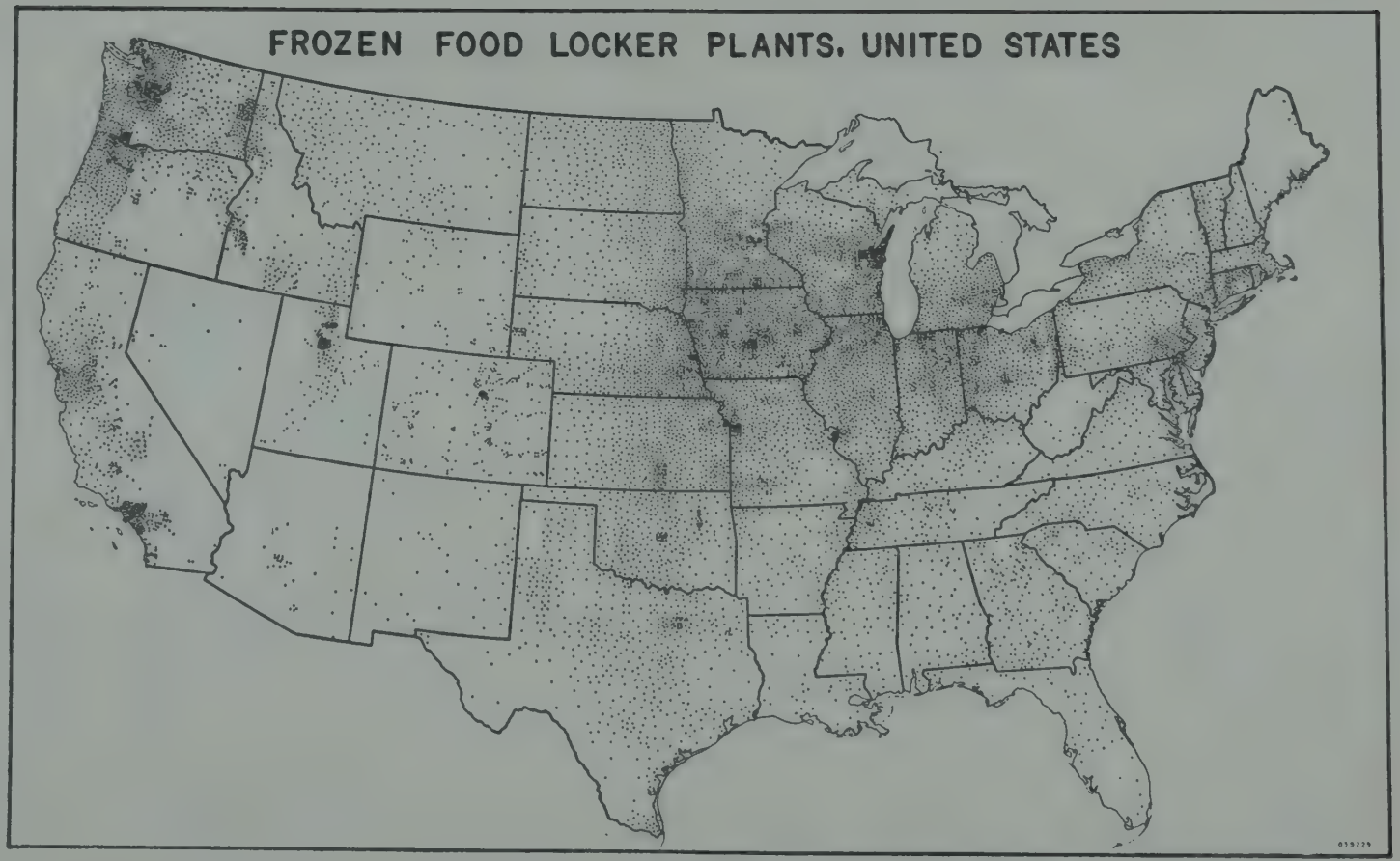


Photo courtesy of Farm Credit Administration, U. S. D. A.

Map showing the wide distribution of locker plants with the heaviest concentration in the North Central and Pacific areas.

they are at least well on the way to becoming the community food preservation centers.

The locker plant managers, by dint of conscientious effort to serve and please you with a place to freeze your foods and a place to store them, have made locker plants an enterprising business. They have made themselves the watchdogs for all your freezing needs and problems. Many times they go to great lengths to prove it. There are numerous fine examples of this—but the following speaks for them all:

A New England locker operator selected, prepared and froze the entire contents for the locker of one of his patrons over a period of six months—or rather his wife did. Here's the story: There was sickness in this particular patron's family—his wife. It was serious too, with long hospitalization and convalescence. This happened right at the start of the summer freezing season and it was impossible for the family to fill their almost empty locker. Lockers being at a premium, the patron felt as long as his family would not be able to use it, one of the families on the locker operator's long waiting list should have the opportunity of using it, food being so scarce that year. But the locker operator felt differently about it. He talked it over with his wife and they decided to keep their patron happy by keeping the locker in question filled until the family could manage this task again themselves. It was one of those neighborly things that happen in small communities where business is on a friendship as well as a business basis. This act of kindness was certainly welcome; and the savings to the locker patron's food budget helped considerably in his crisis. Needless to say that this business man cemented an enduring patronage by performing such helpful service.

This is not the first time attention has been centered on the locker operator's wife as one of his best assets in business. Running a locker plant and serving its patrons seem to be a natural for joint interest and endeavor. Wives know the

woman's angle of freezing and using foods which might otherwise be overlooked by the locker operator.

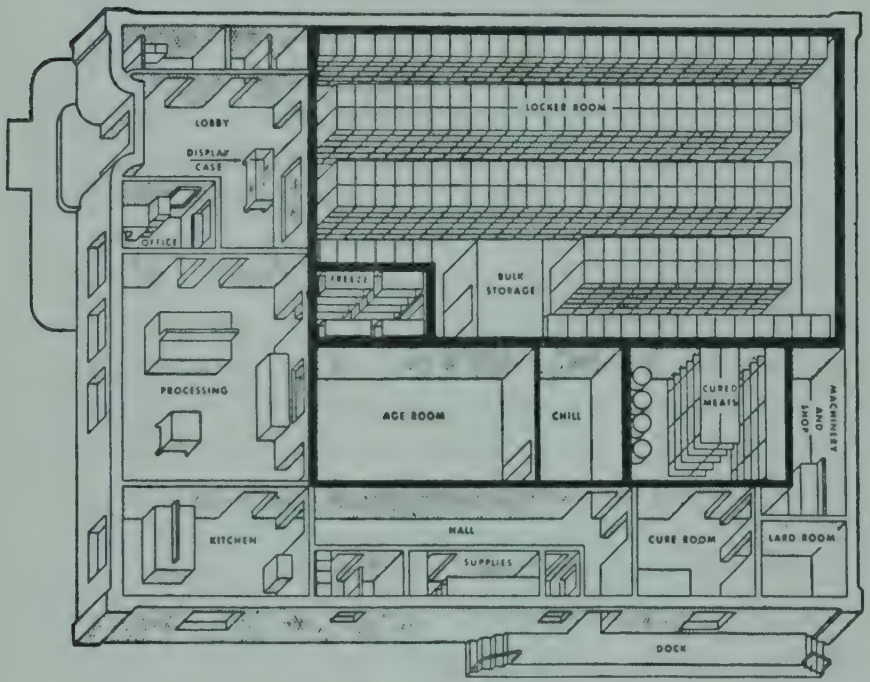
An operator of a plant in the Pacific northwest has made an outstanding contribution to the needs of his locker patrons by working out a buying schedule for their meat requirements. Prior to his taking over the locker plant, he had been operating a large meat market, so he knew approximately how much meat each locker patron would have to freeze to supply families of from three to eight persons. Not wishing to risk any ill will or dissatisfied customers, he even tested out the meat schedules so his advice would not be mere paper theory. As a result of his efforts, his meat purchasing schedules represent real economy to the locker patrons because they not only make full use of the locker space rented, but provide a year-round meat supply purchased at the most economical prices.

Not all locker plants are able to perform all services; it depends in great measure upon their location, their patronage, the cost of the service to you, and the kind of business your locker man is in.

If he is in the creamery or refrigerated warehouse business and operates the locker plant as a sideline, chances are you will have to prepare and package your own food for freezing. If his business is a retail establishment such as a grocery store or meat market with the locker business as a sideline, in all probability he will furnish a meat cutting service and possibly a meat curing or packaging service.

However, if your locker man is operating the locker plant as his sole or major business, and has designed his plant to give freezing services as well as locker space for storage, he is in a position to furnish you with meat chilling, aging, curing of hams and bacon, rendering of lard, making of sausage, and many other affiliated services. A few plants even have slaughtering facilities; many other make arrangements for meat supply and the slaughtering of it elsewhere. Your locker man may

also offer a complete poultry freezing service which is a welcome one when a quantity of chickens is to be frozen. With his equipment he can much more quickly and efficiently pluck, dress, and package poultry than you can do it at home.



Courtesy of Frigidaire Division, General Motors Corp.

Floor plan of modern locker plant. This floor plan provides approximately 1000 lockers, chill room, aging room, cure room, freeze room, utility kitchen, processing room, lobby office, cure and smoke room, lard grinding and rendering, supply room and shop. A plant of this size will require more floor space than ordinarily found in a store room, and for this reason a special building may be required.

There are very few locker plants offering fruit and vegetable preparation service. There are several reasons for this: Up to now, more meats are frozen and stored at locker plants than any other food, although in recent years more persons are freezing fruits and vegetables than ever before. But it still remains questionable to your locker man whether or not he

can afford to install complete equipment for fruit and vegetable preparation and whether you could afford or *want* to pay the relatively high service charge which he must get for performing this service for you. For complete processing of fruits and vegetables, including the cost of the packaging materials, your locker man has to charge around 13 to 16 cents per pound of produce. Many women feel they would just as soon prepare their fruits and vegetables at home, since it doesn't require any special equipment like meat does, and save this additional cost price of their frozen produce. Where such fruit and vegetable processing is offered, there is no question but what it saves you much time and trouble, especially where large quantities of either of these products are frozen. In those areas where large quantities of garden produce are grown you will find an increasing number of locker patrons taking advantage of fruit and vegetable preparation facilities offered by the local locker plant. This service may be one of two kinds: (1) a complete preparation service and freezing, sometimes under the direction of a competent woman schooled in the procedure; (2) kitchen facilities where locker patrons may bring their produce and prepare their fruits and vegetables on the premises.

The latest locker plant development, which seems to have many advantages, is a *branch-locker* operation combining the advantages of a small non-service unit with those of a complete freezing preservation unit. In small outlying communities where volume of business would not justify investment in equipment for a complete processing service for all types of foods, branch locker-rooms with a capacity of from 50 to 250 lockers are built which are part of a large-scale association having a central plant where all services are performed for any patrons of the branch locker-rooms. Foods for processing are taken to the central plant where they are prepared, packaged, and quick frozen; they are then returned to the local locker-room for storage.

A BAKER'S-DOZEN HELPS FROM YOUR LOCKER MAN

Here are a baker's-dozen ways your locker man may be of help to you and your food freezing problems. As stated previously, not all of the food processing services may be available from your locker man, but in most instances many of them will be.

Source of Supply for Foods—Both Fresh and Frozen—In case you do not have a sufficient supply of home-grown foods to freeze, your locker man will be a good source of information for the names of those farmers or produce growers where home-grown food can be purchased in sufficient quantity to meet your needs.

Many times he also will have in stock commercially prepared fruits or vegetables, fish and shellfish—foods which are not ordinarily produced locally—which can be purchased by the dozen or half-case lots to supplement your own frozen food supply.

Source of Supply for Packaging Materials—Your locker man can usually be relied upon to keep a good supply of packaging materials on hand for sale to all persons who freeze foods. He can also render good advice on the merits of the various kinds of cartons, containers, and sheetings or wrappings for use with different foods.

For Fast Freezing Large Quantities—The freezing capacity of any home freezer is limited by its size; that is, no more than a given quantity of foods can be placed in a home freezer at one time for freezing. If you attempt to freeze more than the recommended amount at one time, freezing takes place too slowly and you are likely to encounter losses through spoilage. So it is not only desirable, but oftentimes necessary, to take large lots of packaged foods to your locker man for fast freezing by means of the freezing equipment he has on hand for this purpose. His charges for freezing foods for you are small: about two cents per pound (average 1.9 cents). Where a

complete meat freezing service is rendered—chilling, aging, cutting, and packaging—the cost of freezing the meat is usually included in the cost of overall handling.

Provides Auxiliary Frozen Storage—It is an all too common experience that no matter what size home freezer you buy, it never seems quite large enough to *always* meet all of your frozen storage needs. Part of the economy of having freezing facilities is to have, or provide through an auxiliary locker, ample storage to permit the purchase of "bargain" foods in quantity lots, as well as foods in peak season when market prices are low. Oftentimes it is impractical to store large quantities of meat or wild game such as deer or elk in a home freezer when its size will barely accommodate the every-day needs of the family.

These and many other instances are typical of the need for auxiliary storage space which your locker man is able to supply at a cost you cannot afford *not* to take advantage of when one considers that his rental charge per month is the approximate cost of one rather small steak or roast. Computed on this basis, the saving on food by using a rented locker for storage of the overflow from the home freezer is not a matter of minor importance.

Survey studies on costs and savings of locker users reveal some interesting data: Locker rentals average from $13 to $15 per year; locker users save upwards of an estimated $100 per year on their food budgets *while their meat consumption increases from 30 to 50 per cent!* Conclusive proof, it seems, that you can eat better at less cost with freezing facilities.

A Standby for Prolonged Power Failure—The refrigerating engineering knowledge that has gone into the manufacture of home freezers does not make mechanical trouble a likelihood. But there are times when electrical power is disrupted due to a severe storm or some other such unavoidable difficulty. While actual tests have proved (see p. 24) that power failures

over a short period of time are not particularly hazardous, there is no mistaking the danger of a prolonged power failure. At such times your locker man is sorely needed as a standby for the safekeeping of your foodstuffs. Also, when power failures of short duration occur and the temperature of a large quantity of frozen packages rises much above 15° or 20° F., it is advisable to take the contents of your home freezer to your locker man for a few hours of sharp freezing at low temperatures to bring the temperature of the foods down as quickly as possible. It would take a small home freezer a long time to do this and there might be danger of spoilage, or at best a greatly deteriorated product.

Aging Beef Carcasses—One of the services which many locker plants offer and which it is almost impossible to do yourself, unless it is late fall or winter and you live on a farm, is the proper aging of beef carcasses (and mutton, when it is so desired). Admittedly, one of the things that produces fine flavor and tender texture in a choice steak is the aging of the carcass before it is sold at retail or packaged for freezing. (The humidity and temperature factors affecting good aging of beef are covered in a later chapter). This is one service your locker man can do well for you, and you will do well to let him.

Chilling, Cutting, Grinding, Wrapping Meats—If you live on the farm and already have the necessary equipment and have had experience in slaughtering, you may not need the locker man's service for chilling, cutting, grinding, and packaging meats. But for all others, this is a service performed by your locker man that can actually save you many, many times the small cost he charges to do it for you. For unless you are experienced, you are liable to waste a large portion of your meat by not cutting it up properly; and if it isn't properly chilled before you cut it up, it is likely to be lost through spoilage. Besides, the meat saw, boning knives, meat grinder, etc., needed to do the job at home are expensive equipment which would

add materially to the original cost of your meat if it had to be purchased.

The cost of chilling, cutting, wrapping, and freezing meat averages about $2.75 per hundredweight, or 2-3/4 cents per pound. The cost of grinding meat is usually in addition to the other cost of handling; about $1.41 on the average per hundredweight.

Curing Meats—When whole or half carcasses are bought and you wish to make the most of each portion of your purchase, you will find the curing and smoking service offered by your locker man a real help, for in all probability you will want ham and bacon as well as roasts and steaks and chopped meat. He charges on an average of $3.72 per hundredweight to cure meats; $2.14, to smoke them. Even those persons raising their own meat animals, and who already have a smokehouse, often find it advantageous to turn this rather tedious task over to their locker man.

Making Sausage—Here again, this service will help you utilize to the fullest your investment in a carcass of meat. Sausage making is tricky unless you have had experience, and since your locker man is undoubtedly experienced with making it, better let him do it well and pay him the penny or more per pound he asks for his services.

Rendering Lard—Even when equipment is available for rendering lard on the farm or in rural communities, no woman would prefer doing it if she didn't have to, especially when your locker man charges only a moderate fee for this service. It is not nearly the arduous chore for him as it is for you under home conditions.

Plucking, Dressing, Packaging Poultry—Poultry picking machines are usually installed where this service is available, and in less time than it takes to tell about it, a bird can be picked clean. As a matter of fact, locker attendants work so fast and efficiently doing this service for you that a dozen birds can be

plucked, dressed, and packaged for the freezer while you manage to do several. If you are in the habit of having your butcher dress and cut up your chickens for you, you certainly will welcome the locker man who is equipped to do the same service.

Preparing and Freezing Fruits and Vegetables—As previously mentioned, prices charged by your locker man for preparing and packaging fruits and vegetables may be slightly higher than you feel this service warrants. This is especially true where you are freezing only a few packages at a time. However, for large quantities of produce, no price is too high if you do not have the time, nor the place, nor the inclination to do it yourself.

Kitchen Facilities for Do-It-Yourself—Locker patrons find kitchen facilities at the locker plant very convenient, in the few locker plants where such is available. It is sometimes easier for patrons to transport bulk fruits and vegetables before starting to prepare them for freezing than to transport the packaged product for freezing.

HOW TO BE A GOOD LOCKER PATRON

Talk to any groceryman, when he is off duty, and you'll find he has a host of small *and real* grievances against the women who pinch fruit and bruise it, who finger this and finger that, who distrust his veracity when he recommends the food on his shelf, or who think he doesn't give them full measure on his scales. Well, your locker man has his pet grievances too, first and foremost among which are "lost keys." Not all lost keys are lost, so the locker man thinks; you just forgot to bring it on that particular trip to your locker. The fact that keys are easily lost and when they are, your locker is vulnerable to the finder, really does cause the locker man a lot of trouble. So if you will guard your locker key with the same tenacity as you do the key to your bank's deposit box which you rent, things will run smoother

for your locker man and he will be able to give you better service.

Also, remember the locker man is entitled to keep regular hours the same as any other business man, so time your trips to your locker during hours; barring emergencies, don't arrive after hours and expect service if he's still there.

You've got to trust your locker man the same as you do the integrity of your butcher or grocer—perhaps more so. For you put a carcass of meat in his care and you will not get the same number of pounds of edible meat as carcass meat because bones, trimmings, fat, and inedible portions account for almost half of a carcass weight.

It is good advice also to listen to your locker man's suggestions for the quantities of food your locker will accommodate. If you freeze more food than your locker will hold, it means considerable trouble for him to store such surplus in another place when no other storage space is available.

A MESSAGE TO LOCKER OPERATORS AND ATTENDANTS

Turn about is fair play, and after telling your locker patron how to be a good locker patron, here is a miscellany of tips on how you can be a *better* locker operator or attendant, for the success of your business lies in the thoughtfulness and efficiency of your services.

The first thing patrons expect from their locker man is a big helping of courtesy; in addition, it's the least expensive service you can offer to all parties concerned and will bring in some of the greatest profits.

Another significant item you may overlook is the fact that for every man who rents a locker from you there is almost always a woman who makes frequent trips to it. She watches the way you keep house, and she may be supercritical of the way you do it. Perhaps she has a right to be very critical of the cleanliness of your place of business, for it is *her* food you are handling

or keeping for her, and its sanitation is dependent upon the way *you* care for it. She is the protector of her family's health and she wants you to be the protector of their food she entrusts to your care.

Making her comfortable is perhaps the next best thing to win her confidence and friendship. Here it is the little things that count, like providing her with a basket to carry her packages to and from the locker, or giving her a coat to put on over a sheer summer dress when she wants to go into the zero storage room.

Expedite her food processing when she brings it to you; don't let a patron's food stand waiting for attention, handle it as carefully and as efficiently as if it were your own. Get meat animals ready for the chill room as quickly as possible. Pick and dress poultry immediately. If fruits and vegetables cannot be taken care of when they are brought to the plant, at least place them under refrigeration until you are able to do so. Vegetables allowed to wilt lose much of their goodness and vitamin content; fruit allowed to stand at warm temperatures is likely to get soft and mushy.

Deserve her trust in you by being honest in all things and as well informed about freezing procedures as possible. You are the logical one for her to turn to when she encounters a problem for which she cannot know the answer. Therefore, have a good instruction book available for her use.

Don't let patrons down with inferior packaging or inferior packaging supplies. Make certain that the wraps you use on meats are moisture-vaporproof and will give food the needed protection. Don't be afraid to spend the extra few cents for *good* packaging materials whether you use them on patron's food or sell the wrappings to them. No cost of packaging materials can compare with the cost of foods lost through improper packaging.

Listen to locker patrons' complaints or suggestions when

they have any to offer; an attentive ear can lead the way to vast improvements in your business.

If a service is offered, obtain the proper equipment so you will be performing the best possible service for your patron and it will be worth the money paid you to do it.

Maintain your storage locker rooms at 0° F., not 5°, 10° or 15° F. It has definitely been established through tests that foods will not keep as long nor as well at the higher temperatures.

Be on constant watch for your patrons' interests and be on the lookout for new ways to serve the community with your present facilities. There are usually restaurants and institutions who need space for bulk storage—both refrigerated and frozen. There may be farm customers who would welcome a place for shell egg storage. Such a room, however, should be separate, for eggs pick up odors and flavors easily; humidity and temperature must be carefully controlled for this kind of storage: optimum relative humidity should be 85 to 90 per cent—temperature should be 31°–32° F. Then eggs will store almost perfectly for three months or more. There are many commercially prepared frozen foods which you can buy and resell to your patrons which they cannot buy and freeze themselves; such foods include orange juice, fish not native to the locality, shellfish, vegetables and fruits not produced locally, etc. You can hang an announcement board on which information can be posted telling what foods to freeze, when foods are best to freeze, when meats can be bought at worthwhile savings. You could even conduct a Frozen Food Surplus Exchange on such an announcement board for use of your locker patrons who find they have frozen too much of one vegetable and would like to exchange this surplus with someone who froze too many fruits.

As a last tip to operators and attendants of locker plants, let us ask a question: Have you ever watched your mother when

the front door bell rings? If her apron is soiled, she hastily removes it; if a wisp of hair has fallen over her forehead, she quickly tucks it back in place; if her house dress is not clean and tidy, you can see the wish forming in her eyes that it were as her hands unconsciously smooth down the wrinkles and rub over the soil. She has work to do the same as you, but she always manages to put her best foot forward by way of a clean, neat appearance because she knows others judge the kind of housekeeper she is by the appearance she makes. So it is with you who must greet visitors, or be prepared to greet them throughout the business day. Your personal appearance can invite business, or reject it.

CHAPTER IV

A 5-point Program for Freezer Space

A freezer has to be managed just like family finances, otherwise you're liable to get "all balled up"; your freezer space and all the food you want to freeze just won't come out even. Halfway through the summer you're likely to find the freezer loaded to capacity with many fruits and vegetables still to be frozen and no place to freeze and store them.

Those experienced in the every-day use of freezers can only offer guideposts for the inexperienced because what you do with your freezer space is dependent upon a number of things: to what extent you want frozen foods to supply the family food needs; the size of your family and freezer space; family likes and dislikes; the kind and quantity of homegrown foods available; the cost and quality of market foods; the amount of entertaining you normally do which might be a drain on the contents of the freezer, and special dietary needs of family members.

Managing the freezer can best be accomplished with a program, well defined and outlined *on paper* before the spring planting season begins, because you will want to grow those varieties of vegetables which are best for freezing. File your freezer program for safe keeping, not only to refer to occasionally to check on how it applies in actual application to your food needs, but also to use in preparing the succeeding year's program.

The rate at which the food goes into the freezer and out again plays a big factor in the final cost per pound of food frozen.

Keeping foods in the freezer for prolonged lengths of time is just not economical freezer management. Freezing costs on a pound basis decrease in proportion to the increased poundage of frozen foods consumed by the family. Cost estimates should also take into consideration the amount of electricity used, the cost of packaging materials, any freezer repairs, and the average cost of a freezer distributed over a 10 year period.

Here is a 5-point program which can be used as the structural basis for any size freezer and any size family:

1. Freeze those foods at hand.
2. Freeze what you use.
3. Need what you freeze.
4. Confine "Specials" to left over space.
5. Keep a record of what goes into the freezer and out.

Detailed information for your program will have to be supplied by yourself, but here are the "ifs" you will find it profitable to check on beforehand in making out your program so that you reap a decided profit from your investment.

FREEZE THOSE FOODS AT HAND

Common sense dictates that if you have a subsistence garden —a small plot which provides home-grown vegetables for summer plus a surplus—it would be foolhardy to fill your freezer with market-bought fruits and meats while your surplus vegetables possibly go to waste. So the first step in preparing your program will be to take an inventory of those foods which you grow yourself or which are grown locally.

If you live in the city and have had a home garden plot, there is every reason why you might wish to continue gardening to provide a portion of the family food needs and freezing the surplus vegetables. Gardening becomes profitable when the gardener becomes experienced; successful gardening represents a real saving of dollars and cents; and, to some, it provides

a hobby which in turn provides much-needed exercise and sunshine. If the size of your freezer will accommodate meat as well as all the surplus vegetables you grow, it might be a wise investment to purchase commercial meat cuts (whole loins, rounds, quarters, etc.) which can then be cut into family size pieces, wrapped, and frozen. The purchase of meats in this manner can represent quite a saving over buying individual cuts as they are needed. The purchase of poultry does not net the saving that meat will; besides, if roasting chickens are frozen, they take up considerable space, space which can be more profitably devoted to other foods in a small freezer.

If you live in a suburban community or a rural town, you will have at hand many more foods which will be profitable to freeze. If you do not grow your own vegetables, there no doubt is someone you know who does, from whom you can buy what is needed for freezing purposes at very reasonable prices. If you grow berries and have several fruit trees, it will be profitable for you to provide freezer space for these foods. Often there is an orchard in the vicinity, or a farmer or produce man with whom you can deal directly to be assured of a saving and good fruit at the proper stage of maturity for freezing. If you wish to freeze meats, you may again be able to deal directly with the man who raises meat animals and poultry. But remember that a 6-cu. ft. freezer will hold only 210 to 270 pounds of meat—or—from 160 to 324 pint packages of fruits and vegetables at one time. This amount of freezer space will not hold an ample supply of all these to provide all the meat, vegetable, and fruit requirements for a family of five during the non-productive months of the year. So, in order to make the most practical use of freezer space, decide which of these foods represent the greatest savings; or, arrange to supplement your freezer space with additional storage at the local locker plant if you decide they are all profitable and you wish to freeze meats, vegetables, and fruits.

Some farm families who look to the freezer for all their perishable food needs during the non-productive months of the year, already have invested in *two* freezers, having found that ample freezer space is not only to be desired, but it pays big dividends. Other farm families, besides having a big home freezer, supplement their freezer space with locker plant storage. So, if you live on a bona fide farm, whether you class yourself as a gentleman farmer or a dirt farmer, there is either sufficient surplus food grown or raised right on the premises, or what is raised can be supplemented by trade or purchase from neighbors, to freeze enough food to supply all the vegetables, fruits, and meats needed for the months when the produce is not available fresh *plus* special perishable foods such as baked goods, ice cream, dairy products.

FREEZE WHAT YOU USE

Food in the freezer not used is freezer space not bringing profit to your freezer investment. So when you have determined what kinds of food the size of your freezer will accommodate and what foods are readily available, the next step is to determine as nearly as possible the frequency of use of each food based upon the family's food habits and their likes and dislikes.

You are likely to find both food habits and food preferences gradually alter with the advent of frozen foods into your family life, especially with respect to vegetables and, in many instances, fruits. Freezing can initiate new frozen vegetable tastes into the family food picture to give the wide range of variety which has been lacking during non-productive months in those areas not served by city market fresh vegetables. All areas are virtually devoid of locally grown fresh fruits during many months of the year, and frozen fruits in the freezer will probably prompt you to serve fruits more often for dessert purposes.

The most popular vegetables will represent the biggest pro-

portion of the vegetables you freeze. But in any case, reserve some small space for a few packages of those vegetables served rarely, or not at all. Try them out the first year to see if the family likes the flavor of the frozen product, because freezing seems to improve the flavor of some of the less desirable vegetables, especially strong vegetables such as parsnips, making them more mild and pleasing in taste to the average person.

Readjust your program from year to year to cater to the changing food habits, the likes and dislikes of your family.

NEED WHAT YOU FREEZE

Merely to guess in what proportion you will need vegetables and fruits and how many packages of each kind to freeze, is not good freezer management. If you have never frozen foods before, try to calculate the frequency these foods are served by studying your grocery slips or your daily menus if you have a bookkeeping system for your kitchen. Or, over a period of a month keep an accurate account of how often vegetables and fruits are served in your household, what kind of each are served, and make your calculations from that.

The foods on a grocer's shelf which make the best profit for him are those which have a fairly rapid "turnover," quick purchase and sale. So it is with freezer space, but the turnover is not as frequent because your aim is to make your supply last until the food you are using is again available in fresh form. But at such time you also want your preserved supply to be exhausted, or nearly so.

A good general rule to adhere to in using fruits and vegetables from the freezer is this: Do not use any of your preserved products as long as any fresh fruit or vegetable is available in your garden or orchard, or when they can be bought at low, "in season" market prices. Start using your preserved supply as soon as the fresh is not to be had under these conditions.

When meats are frozen, they can be used continuously

throughout the year because they are always available. As soon as the frozen supply is exhausted, or nearly so, more can be slaughtered or purchased to refill the freezer space allotted to this food.

By managing your freezer in this way, you operate on a rotating freezer budget: putting foods in or taking foods out almost every month of the year. Such a rotating budget will keep your freezer full, or nearly full at all times.

STORE "SPECIALS" IN LEFT-OVER SPACE

The larger your freezer, the wider range of foods you will be able to freeze and store, and the more nearly your freezer can come to supplying all the perishable food needs of the family when the fresh product is not available. The list of foods you can freeze is long: besides meat, vegetables, and fruits, there are poultry, fish, shellfish, wild game, dairy products, baked goods, cooked foods, and ice cream.

However, where freezer space is limited, it is wise practice *not* to sacrifice any space to the "specials" (such as cooked foods) at the expense of the staple foods. As the freezer empties there is plenty of opportunity to use this empty space for storing a quantity of ice cream, or a few pies, cakes, rolls, or other cooked dishes.

Since it is advisable to freeze dairy products only in anticipation of those few months when the supply is lean, space can usually be found to freeze sufficient surplus eggs, cream, and butter for this purpose when desired.

Because broiling and frying chickens can be slaughtered fresh only a few months of the year (unless poultry is raised to mature every few weeks during spring, summer, and early fall), it might be a wise practice to freeze the bulk of your poultry as broilers and fryers. Fowl for roasting and fricassee can easily be had fresh-killed almost any time of the year whether you buy or raise poultry.

DAILY RECORD KEEPING HELPFUL

The best grocery store managers know from day to day just what stock they have on hand. It is also good management on your part to keep some kind of a freezer inventory. Just a simple list of short-storage foods that should be used up within a given period may suffice for your purposes but a more complete inventory, even though it takes slightly more effort, rules out the possibility of emergency trips to the store or a last-minute change of menu plans.

There are blackboard type inventories on the market that are handy gadgets, if you have wall space above the freezer or nearby for hanging them on the wall. (See illustration facing p. 81). There are also several types of book or ledger inventories available at your nearest stationery store. It is easy to keep records once we get in the habit, and it is a time-saver in the long run.

To get the most in service from your freezer learn to use it EVERY DAY. A constant turnover of all but seasonal foods insures you of room for more good meals at real savings. Make sure frozen foods really do go INTO the FREEZER and OUT!

SUGGESTED FREEZER BUDGETS

Taking into consideration that home-grown vegetables and fruits and farm-raised meats (or the purchase of commercial cuts at a saving) represent the greatest economy in a freezer food budget, we have prepared the following suggested freezer budgets based on the 5-point program just outlined.

The aim of each of these budgets is to provide during the non-productive months as nearly as possible for the food needs of the family for those foods grown or found at hand locally. In Budget No. 3, for example, if the contents of a 6-cu. ft. freezer is confined to home-grown garden products (mostly vegetables, a few strawberries, rhubarb, cherries, or raspberries) a family of 4 can draw on the freezer and from their garden for their

entire supply of vegetables for the whole year. The same freezer space could be devoted to a fairly wide range of fruits as well as vegetables, but quantity would be sacrificed and the supply would only partially fill a family's fruit and vegetable needs for the approximate 8 months when these foods are not available fresh. Also the fact must be considered that in most instances fruits such as peaches, apricots, raspberries, blueberries must be purchased. So it may be wise where freezer space is limited to make the most of your home-grown foods; then, as these foods are used and when freezer space permits, supplement your home-preserved supply with commercial bulk purchases (1 dozen packages, or more) of fruits. In cases where expensive fruit has to be purchased and freezer space is limited, you will find it just as economical considering cost, materials, and time involved, to contact a dealer in frozen foods and buy a quantity of commercially prepared fruits.

When a freezer is filled with home-grown garden produce, the freezer space provided as these products are used will allow for the freezing of bulk purchases of meats which can either be purchased already prepared and frozen, or in commercial cuts.

Using every bit of freezer space all the time represents the greatest savings on food costs.

How you package your foods also can mean either economy or wastefulness. If they are bulky, they naturally are not economical of freezer space; if the packages are cylindrical instead of rectangular, they also take up more space. The number of pint packages of frozen foods which can be placed in a standard-size locker (18 by 20 by 30 inches) varies from about 160 to 324, depending on the shape of the cartons. If rectangular cartons are used, an average of 300 pints or 150 quarts can be put into such a locker. The number fitting into a home freezer is approximately the same.

The budgets listed here represent rectangular cartons and containers for fruits and vegetables.

BUDGET NO. 1 - - 4 CU. FT.
(Family of 4)

Monthly Rotating Storage Supply

Quantity		Product	Prepared Weight, Lbs.
4		4-lb. Roasts: beef	16
2		$2^1/_2$-lb. Steaks: sirloin, etc.	5
$1^1/_2$		Loins: lamb, veal, pork	20
1		Ham	12
8		Fish Fillets	8
2		Frying Chickens	4
4	Pts.	Broccoli	
6	"	Asparagus	
4	"	Spinach	
12	"	Sweet Corn	
6	"	Lima Beans	
12	"	Peas	
6	"	Green Beans	
4	"	Cauliflower	
10	"	Carrots	
8	Pkgs.	Corn on Cob	
10	Pts.	Strawberries	
3	"	Blueberries	
10	"	Red Raspberries	
9	"	Peaches	
2	"	Rhubarb	
2	"	Apple	

Explanation: The fruit and vegetable budget allows the purchase of commercially prepared packages by the dozen, to replenish the supply as they are needed; it allows for slightly more than two packages of vegetables each day, and slightly more than one fruit, allowing for the occasions when two packages may be needed. The meat budget allows for one roast per week, with slight allowance for second meal servings from the roasts; steak twice during the month; ham (using top three slices for separate meals) six times during the month; fish once a week; and loins (as chops, or pork roasts) to fill in for other meals. This budget allows occasional freezer space for extras, such as ice cream, a pie or two, or bread, leftovers, etc.

BUDGET NO. 2 - - 4 CU. FT.
(Family of 4)

Three-Month Supply Meats Only

Quantity	Product	Prepared Weight, Lbs.
8	$5^1/_2$-lb. Roasts	44
2	Loins: veal, pork	30
2	Hams	22
2	Legs of Lamb	14
12	$2^1/_2$-lb. Steaks	30
6	Frying Chickens	12
3	Roasting Chickens	10

Explanation: Roasts could be oven or pot roasts; loins could be cut into chops or, in the case of pork and veal, into roasts and chops; ham could be partly sliced (about three top slices) and remainder could be baked, etc. As soon as one kind of meat supply is exhausted, it can be replenished—or—surplus space could be used to freeze occasional baked goods, surplus fruits or vegetables, ice cream storage, etc. Meat servings from this budget approximate one roast weekly, with the roast used for a second meal; ham once a week; leg of lamb occasionally, with sufficient supply for a second meal from each; steak once a week; fried chicken every other week; roast chicken once a month; and meat from loins to supply meals in between as broiled or pan-fried chops, etc.

BUDGET NO. 3 - - 6 CU. FT.
(Family of 4 or 5)

Home-Grown Produce

Month	Product	Prepared Pts.
May–June	Asparagus	15
	Rhubarb	10
June	Strawberries	30
June–July	Cherries	10
	Peas	30
June–Oct.	Spinach, Other greens	30
July	Raspberries, Other berries	20
	Gooseberries	5
July–Aug.	Green Beans	30
July–Sept.	Cauliflower	15
July–Oct.	Broccoli	15
Aug–Sept.	Lima Beans	20
	Peaches	20
	Sweet Corn	45
Sept.–Oct.	Pumpkin	5

Explanation: Any home- or locally-grown fruits or vegetables in this budget may be substituted for those listed which may not be readily available. The budget is designed for use only when fresh fruits and vegetables are out of season (approximately eight months) and should be supplemented by those root vegetables and fruits which can be cellar-stored. Use both fruits and vegetables continuously during non-productive months; if additional are needed before the next producing season, purchase commercially prepared products by the dozen or half-dozen packages. As the freezer empties, surplus space can be used for freezing commercial cuts of meat (beef round, pork loin, etc.) or the freezing of baked goods or storage of ice cream, etc.

BUDGET NO. 4 - - 6 CU. FT.
(Family of 4 or 5)

Continuous Meat Supply Only

Month	Product	Prepared Weight,* Lbs.
July	Beef (1 quarter)	100
Sept.	Lamb (1 carcass)	50
Nov.	Pork (2 hogs) (or $^1/_2$ hog and 1 veal calf)	200†
Jan.	Beef (2 quarters)	200
March	Pork (1 hog)	100†
May	Veal (1 calf)	100

* A carcass dresses out to about 50% of its original weight by the time it is trimmed, boned, etc., and ready for the freezer.

† A portion of this meat would be cured for use as hams, bacons, etc.

Explanation: This budget is designed to be drawn on continuously for the entire meat supply for the family. Upon occasion there will be small surplus freezer space which can be used for ice cream, leftovers, baked goods, and cooked foods; or, if there is a good source of supply of fish, either fresh or commercially frozen, the surplus freezer space could be used to supply in great part the family's needs of this food.

BUDGET NO. 5 - - 12 CU. FT.
(Family of 4 to 6)

Fruit, Vegetable, and Meat Supply

Month	Produce	Prepared Pts. or Lbs.*
Jan.	Beef (2 quarters)	200 Lbs.
March	Pork (1 hog)	100 "†
May	Veal (1 calf)	100 "
May–June	Asparagus	15 Pts.
June	Strawberries	30 "
	Chickens (12 broilers)	16 Lbs.
June–July	Peas	30 Pts.
	Rhubarb	10 "
June–Oct.	Spinach, Other greens	30 "
July	Raspberries, Other berries	30 "
	Chickens (24 fryers)	48 Lbs.
	Beef (1 quarter)	100 "
July–Aug.	Green Beans	30 Pts.
July–Sept.	Cauliflower, or Mixed Veg.	15 "
July–Oct.	Broccoli, or Carrots	15 "
Aug.–Sept.	Sweet Corn	45 "
	Peaches	20 "
	Assorted Fruit Purées	10 "
	Lima and Shell Beans	10 "
Sept.	Lamb (1 carcass)	50 Lbs.
Oct.	Pumpkin, or Squash	10 Pts.
Nov.	Pork (1 hog)	100 Lbs.†

* A carcass dresses out to about 50% of its original weight by the time it is trimmed, boned, etc., and ready for the freezer.

† A portion of this meat would be cured for use as hams, bacons, etc.

Explanation: The fruits and vegetables in this budget are to be used as soon as fresh produce is no longer available from garden or local markets, to be replenished if need be before the next producing season with commercially prepared frozen fruits and vegetables purchased in dozen lots. The meat supply should be drawn on continuously to supply all the meat needs. As the freezer empties, surplus space may be utilized with fish, leftovers, baked goods, cooked foods, ice cream, etc.

BUDGET NO. 6 - - 24 CU. FT.
(Family of 6 to 8)

Fruits, Vegetables, Meats, Poultry, Fish

Month	Product	Prepared Pts. or Lbs.*
Jan.	Beef (1 quarter)	100 Lbs.
Feb.	Fish	26 "
	Ice Cream	3 Gal.
March	Pork (1 hog)	100 Lbs.†
April	Fish	26 "
May	Ice Cream	3 Gal.
	Veal (1 calf)	100 Lbs.
May–June	Asparagus	15 Pts.
June	Strawberries	50 "
	Fish	26 Lbs.
	Beet Greens	10 Pts.
	Chickens (12 broilers)	16 Lbs.
	Rhubarb	10 Pts.
June–July	Peas	50 "
	Cherries	10 "
June–Oct.	Spinach, Other greens	30 "
July	Gooseberries	10 "
	Raspberries, Other berries	50 "
	Fruit Pies, baked	12 Pies
	Chickens (24 fryers)	48 Lbs.
	Beef (1 quarter)	100 "
July–Aug.	Green Beans	30 Pts.
	Carrots	20 "
	Blueberries	10 "
July–Sept.	Assorted Fruit Purées	50 "
	Apricots	10 "
	Cauliflower	15 "
	Beets	10 "
	Broccoli	15 "
	Brussels Sprouts	5 "
	Soy Beans	5 "
Aug.	Fish	26 Lbs.
	Ice Cream	3 Gal.

Aug. Sept.	Sweet Corn	65 Pts.
	Lima, or Shell Beans	20 "
	Squash	10 "
	Pumpkin (or pie mix)	20 "
Sept.	Lamb (1 carcass)	50 Lbs.
Oct.	Chickens (6 roasters)	24 "
	Fish	26 "
	Parsnips, Turnips, or Rutabagas	10 Pts.
Nov.	Pork (1 hog)	100 Lbs.†
	Ice Cream	3 Gal.
Dec.	Fish	26 Lbs.

* A meat carcass dresses out to about 50% of its original weight by the time it is trimmed, boned, etc., and ready for the freezer.

† A portion of this meat would be cured for use as hams, bacons, etc.

Explanation: Any of the fruits or vegetables may be substituted for those more readily available from your garden or your locality; the supply is to provide all the fruit and vegetable needs (except root storage vegetables such as potatoes and fruits such as apples) during the non-productive months of the year. The meat budget supplies poultry and fish as well as meat and should be drawn on continuously; it will provide a wide variety of these foods at all times. Besides space being regularly allotted for the storage of ice creams, occasional space may be available as the freezer empties for storing additional "specials" for short periods of time.

CHAPTER V

Nutritional Insurance on Ice

We *are* what we *eat!* More scientific findings than could be put between the covers of this book are available to back up this statement. The best insurance of adequate nutrition for all of us is provided by a diet that includes a variety of health-giving, tasty foods.

Surveys show that to-day there are very few outright vitamin and nutritional deficiencies among American adults—an inspiring contrast to the nutritional health of the nation only as far back as the start of World War II. But there is still plenty of evidence that a large segment of our people are skating on nutritional thin ice. Many people are eating well enough to prevent definite deficiency diseases, but do not allow themselves enough margin to safely resist the nutritional stress that may come with illness, increased work loads, or diet shortages caused by emotional or economic factors. Against such borderline nutrition the home freezer offers the very best protection available. To be better fed and to enjoy a diet that is not monotonous nor yet too burdensome to prepare each day—the home freezer is just what the doctor ordered.

One of the most valuable things about frozen foods is that *they are the equivalent of the fresh food, nutritionally speaking.* One can make an even stronger statement in their behalf: sometimes they rate *higher* in nutritive value than fresh foods which are purchased at market! Furthermore, no such food value comparisons can be made with any other method of food preservation.

Don't misunderstand, a balanced diet will still be of paramount necessity for good health; a balanced diet cannot be disregarded merely because frozen foods are included wholly, or in part, in the daily food supply. Milk, butter, eggs, cereals, and the like will still have to be considered by the wise homemaker who wishes to feed her family the best possible diet. But the year-round use of frozen foods whenever fresh foods are not available will insure to a far greater degree an adequate supply of those nutrients necessary for the best of health.

The lack of fresh foods (or their nutritional equivalent) during a large portion of the year has been a cause of sickness and ill health throughout the centuries. Napoleon encountered many of the malnutrition diseases among his fighting army which cut the strength of it so seriously that it undoubtedly can be considered a factor contributing to his defeat. France, in the wake of wars and revolution at about this same time, was so acutely pressed for proper food supplies that the French Directory (governing board) desperately offered a prize of 12,000 francs to any person who could develop a new and better means of preserving food. Nicholas Appert won the prize by his invention of canning and added to the already known food preservation methods of drying (dehydrating), pickling, and fermenting.

An emergency food crisis like Napoleon and France underwent, and such as the nation and the world experienced in World War II, always brings about a new appreciation of the true meaning of the value of food for human nutrition. Food at such times no longer is just something to eat, but something to sustain physical fitness. To-day homemakers know more about foods and nutrition than they did fifteen years ago; likewise, they care more about whether the foods they serve their family will sustain physical fitness. In light of the present general knowledge of and interest in nutrition, and the swiftly expanding acceptance and use of frozen foods, there is every

reason to believe that the malnutrition ailments such as beriberi, scurvy, anemia, and pellagra will practically be eliminated before too many years have passed. In not all, but certainly in a great many cases, many forms of sickness can be traced to either wrong eating habits or inaccessibility of sufficient fresh foods. If you doubt this statement, think back to your last encounter with the family physician. Was what you eat discussed? Was a diet prescribed or recommended as part of the proper treatment for recovery?

On the surface, the needs which go to make up adequate human nutrition—proteins, carbohydrates, fats, minerals such as iron, calcium, phosphorus, and the group of vitamins—seem to create a hodge-podge. Actually, human food requirements dissolve into a simple pattern. Remember that most nutrients abound plentifully in foods when they are properly handled prior to consumption and anyone eating a wide variety of foods is apt to have a fairly substantial supply of all human nutrition needs which meet all normal health requirements. The time to worry about what you are eating and the nutritional value of your food is when the diet goes "off balance" and appetites are satisfied by too much of one kind of food at the expense of variety.

About as simple design for living as can be found is the well-known repeat phrase: We eat to work to earn money to live to eat to work to earn money to live, ad infinitum. Simple as this is, it is nevertheless a very basic pattern of to-day's life cycle. Try eliminating any one phase of it—the eating, the working, the money to buy things—and the whole structure of living topples. The cycle breaks and cannot be reformed until the missing part is reconstructed.

So it is with food, nutrition, and health. Nutrition follows the same simple, basic cycle. In fact, this repeat phrase can serve to illustrate the nutrition cycle:

We eat foods (nutrients), some of which go to work in our

bodies (fats, carbohydrates, and some proteins, for energy) to provide the wherewithal, or body structure (proteins for body tissue; minerals for blood and bone), to live (vitamins provide the pleasures of life: happy frame of mind, good eyesight, stable nervous system, smooth complexion, good digestion, etc.). Like the living cycle, if any one of the phases of the nutrition cycle is omitted, the results are malnutrition (ill health, and in serious cases the malnutrition diseases). These can only be cured by supplying the missing nutrients.

Let us briefly consider some of the things nutritionists have discovered about food properties, their functions in the body.

The nutritional properties of a food, its nutrients, are determined by chemical analysis—in the case of vitamin determination using experimental animals, it is called "assay." In the laboratory through such tests it is the prime objective of the nutritionist to find out: (1) which nutrients are contained in which foods; (2) how these nutrients are utilized by the body; (3) to what extent these nutrients are needed by the body; (4) how much of the nutritive value of a food remains in the food after it has been stored, preserved, or cooked and is eaten.

The essential constituents of food include proteins, fats, carbohydrates, minerals, and vitamins. Of these, most persons are more familiar with proteins, fats, and carbohydrates and the heat units (calories) they furnish the body. This familiarity isn't necessarily due to popularity because women, especially those who wish to keep trim, are afraid of calories. A too high caloric diet contributing to obesity certainly is neither to be desired nor good for the individual; yet the diet that is practically devoid of caloric value contributes to a listlessness and a continued tired feeling. Energy to perform each day's tasks must come from some place and the only source of physical energy comes from fats, carbohydrates, and, within certain limitations, proteins.

A small amount of fat is necessary for the good absorption

of certain essential foods from the digestive tract into the blood stream. Carotene, the precursor of vitamin A, makes a good example for this need. The utilization of this vitamin by the body is greatly dependent upon the small amounts of fats consumed with the diet; without fats, one could consume considerable amounts of carotene (vitamin A) without much benefit and eventually might have a vitamin deficiency.

It is impossible to live long without an adequate amount of protein in the diet, even though one may exist for considerable periods of time with little carbohydrates and fats. Proteins are essential, they provide the material necessary for repairing the wear and tear of soft tissues and for building new tissues. That's why, during World War II, meat was such a vital food and was given in great quantities to the armed forces.

Proteins are converted during digestion into simpler substances called polypeptids and amino acids which can pass through the wall of the intestines and be taken into the blood stream. These substances circulate in the blood and are at the beck and call of the body cells . . . the cells select the particular amino acid needed for their particular job of building or repair. At least ten of the amino acids have been found to be nutritionally essential, and, since food proteins differ in the kinds and amounts of the different amino acids, it is recommended that the diet provide several sources of protein so all the essential amino acids are consumed in ample proportions. This gives substance to the statement made earlier in this chapter: "anyone eating a wide variety of foods is apt to have a fairly substantial supply of all normal human nutrition needs . . . the time to worry is when the diet goes off balance." Let us presume, for example, that meat is absent from the diet but that sufficient vegetables high in protein content (green lima beans, Brussels sprouts, corn, kale, peas) are consumed, supplemented by occasional protein from fish and fowl. It is likely that such a diet would be off balance because

it lacks a wide variety of protein foods. Besides meat, vegetables, fish, and fowl, excellent sources of protein can be found in milk, cheese, and eggs. Several different kinds of these protein foods should be consumed daily.

There is another reason why it is desirable to eat a wide variety of foods: they contain a great many minerals, scientifically called inorganic ions, which are absolutely essential to life. Nutritionists know these essentials to be sodium, potassium, calcium, magnesium, iron, copper, manganese, sulfur, phosphorus, chlorine, iodine; probably there are many others which are required in very small amounts. Those most often lacking in human diets are calcium, phosphorus, iron, and iodine. Consequently, it is rather common to hear of simple goiter caused by a deficiency of iodine which causes enlargement of the thyroid gland, or anemia brought about by a deficiency of iron in the diet.

For adequate amounts of calcium, phosphorus, iron, and iodine look to the following foods: cheese, milk, ice cream (rich in calcium and phosphorus; contain some iron); meats, marine fish and shellfish for iodine, iron, and other minerals, and fowl (phosphorus and iron); most vegetables are good sources of calcium, phosphorus, and iron. Few fruits give any substantial amounts of these minerals, although apricots are an excellent source of iron while blackberries and loganberries are fair sources.

The importance of vitamins need not be stressed, but there are some existing fallacies which might well be cleared at this time. One is that vitamins in large doses present a cure-all for most of the aches and pains of humanity. True, where there is a lack of a vitamin, a replenishment in the body will effect a cure of the ailment caused by the deficiency, but vitamins *alone* will not effect a cure-all. By taking large quantities of them or eating them in foods, vitamins will not keep you healthy *unless they are accompanied by a balanced diet*—a

wide variety of many foods. The vitamin-conscious public has gone so far in their thinking in this direction that many persons disregard what they eat so long as they feel their vitamin intake is sufficient to give a wide margin of safety in matters concerning health. As a matter of fact, it still remains to be proved by nutrition science just what may happen to *impair* health when vitamins are consumed in great excess of their need!

It is also generally believed that in order to get adequate vitamin content in natural foods which are eaten, one must necessarily consume quantities of special foods, such as spinach or citrus fruit. This is not true, for vitamins abound plentifully in many foods; and, once again, a good rule of thumb to follow is to eat a wide variety of foods. To be sure, one of the real joys of greeting each day comes by way of tipping the elbow with a glass of frozen orange juice or confronting a dish of frozen grapefruit segments brimming with tangy juice—but—there are *nine* common vegetables and *three* fruits which grow in the Temperate Zone which outrank the citrus family in vitamin C content: beet greens, broccoli, Brussels sprouts, cauliflower, collards, green pepper, kale, kohlrabi, and spinach; currants, gooseberries, and strawberries.

Fruits are generously endowed with carotene (vitamin A) as well as vitamin C; vegetables with vitamins A, B_1, and C, and also fairly good portions of the other vitamins with the exception of vitamin D. Halibut, cod, and other fish livers, and fish oils, as well as butter and cheese, are rich sources of vitamin A. Pork is one of the best sources for substantial quantities of vitamin B_1 (now called thiamin); yeast, kidney, and liver, and the germ of grains are also potent sources of thiamin. Beef liver and eggs are excellent sources of vitamin A; while beef liver is also one of the best sources of riboflavin. Kidney, heart, eggs, cheese, dried milk, vegetable greens, and cereal germs are also excellent sources of riboflavin.

Vitamins are important, for each has one or more specific functions in human nutrition. Vitamin A protects specifically against the eye disease known as xerophthalmia, forming a part of the pigment of the retina. Unless sufficient vitamin A is provided for the formation of this pigment, the eyes gradually lose their ability to see normally in dim illumination—a condition known as night blindness and, incidentally, often encountered among the armed forces of World War II. Severe and prolonged deficiency of vitamin A leads eventually to total blindness. Vitamin A also helps maintain normal development of the teeth, as well as a special kind of tissue which acts as a protecting layer of body surfaces.

Vitamin B_1 (thiamin) protects specifically against beriberi in humans. Its absence causes an incomplete oxidation of sugar in the body, which results in an accumulation of toxic products. This deficiency shows itself in a marked loss of appetite, loss in weight, impaired functioning of the nervous system, occurrence of pains and weakness in the limbs, and a slowing of the heart rate.

Vitamin C helps produce the inter-cellular structure of the body. Its deficiency causes the nutrition and structure of the teeth to suffer; and as the deficiency becomes severe, the tiny capillary blood vessels become weakened and cause hemorrhages throughout the body, bleeding of the gums takes place, the teeth loosen, the joints become swollen and the bones become porous and fragile. These are the symptoms of scurvy.

Vitamin D, commonly called the sunshine vitamin, is necessary for the normal growing of bones. It is a highly important vitamin for children and adolescents, and those recuperating from bone fractures, etc.; but to what extent it is necessary for adult nutrition has not yet been determined, although adequate amounts may be important for the prevention or arrest of tooth decay. Fish and fish liver oils are excellent sources of vitamin D; eggs and butter furnish considerable amounts;

and some is obtained through exposure of the skin to the rays of the sun.

Vitamin E, the antisterility vitamin, has been found valuable for late stages of growth and for reproduction. Since it is present in so many foods and so resistant to destruction, ordinary diets are seldom deficient enough to cause any trouble.

Vitamin G (riboflavin) plays an important part in the oxidative processes of all living cells. Cessation of growth, marked loss of hair, nutritional cataract, and dermatitis are some of the physical effects when this vitamin is deficient.

Vitamin K is necessary to the maintenance of normal blood clotting time. It is found in considerable quantities in green leafy vegetables.

Niacin, one of the B complex group, is the pellagra-preventive vitamin. It has recently been recognized as nutritionally important and believed to form a substance in the body which promotes oxidation. Lean meats, chicken, liver, vegetable greens, legumes, and tomato juice are good sources of this vitamin.

Besides niacin, thiamin, and riboflavin, the best-known members of the B complex group include biotin, pantothenic acid, and pyridoxin. There are also six or eight less-known factors recognized as important for some forms of life. A deficiency of biotin may cause dermatitis, nervous ailments, and loss of appetite; pantothenic acid is essential for growth; pyridoxin is needed for the utilization of unsaturated fatty acids.

Nutritionists have discovered that temperature, air, and even light in some instances, affect the retention of vitamins by foods. You will notice in succeeding chapters how these factors are taken into consideration in the proper handling of foods for freezing and the subsequent preparation for table use so that the greatest possible amount of nutrients will be retained in foods when they are consumed.

In saying that frozen foods are the equivalent, nutritionally,

of fresh foods, it means that only small amounts of the nutrients are lost in the process of preservation and that *no more* are lost than in the ordinary procedure of preparing fresh foods for consumption. So if care is taken in procuring the fresh vegetables for freezing directly from the garden, there is every reason to believe that they rate as high in nutritive value when frozen, stored, and served at the table as fresh cooked vegetables. At refrigerator temperature (38° to 50° F.), while the nutritive loss is not great, there nevertheless is a loss of some of the nutrients. Most often several days elapse between harvest of market vegetables and the time they reach the greengrocers; add to this the time elapsing until you buy them, then serve them, and it is easy to understand why this statement is true.

Let us clear up another broad statement made at the beginning of this chapter, which stated that no such food value comparisons can be made with any other method of food preservation.

It is an established fact that the temperature at which foods are kept is an important factor in controlling the rate of loss of certain vitamins. For example, in hot summer weather some vegetables at room temperature standing over a 24-hour period will lose as much as one-half their vitamin C content. At refrigerator temperature the loss is a fraction of this amount; at 0° F. temperature the loss is practically negligible. These statements particularly apply to leafy vegetables and snap beans. Root crops, such as beets, carrots, parsnips, rutabagas, and potatoes, also lose vitamin C even at cool storage, but the rate of loss is relatively slow. In canning and dehydration. foods are heated for long periods; in fermenting and brining, foods are exposed to room temperatures, at best the cold of an unheated room during winter.

All the food properties of fresh and frozen foods have been given keen observation by scientists, but most of their studies

have been concerned principally with possible losses of vitamins because, of all the nutrients, these are the most easily lost.

The studies carried out on proteins indicate that there is no loss of proteins during freezing and cold storage so that the protein in frozen foods is the same as that of fresh.

The only important change which occurs in fat that has been noted is the development of rancidity if fatty foods are stored at too high a temperature for too long a time. The fats of fish become rancid more quickly than those of meat, although pork fat turns rancid rather quickly if the frozen product is kept in storage at a temperature much above 0° F. As fats turn rancid, they oxidize and hydrolyze simultaneously. Oxidized fats do not possess the nutritive value of sweet fats; and the oxidation of the fat causes the gradual destruction of its vitamin A content. Since it has been clearly shown through studies that the development of rancidity in fats can be retarded, in some cases almost indefinitely, by low temperatures, it seems evident that under proper storage temperatures this change in fats and subsequent loss of food value is not significant.

In the storage of carbohydrates at low temperatures there is a gradual change in the sucrose of fruits to dextrose and levulose, but since this is a change which occurs during the digestion of the fresh fruit, it makes the sugars of frozen fruits more easily digestible.

A comparatively small amount of work has been done to prove that cooked frozen foods are as high in minerals as cooked fresh foods. Most of the loss of minerals occurs when frozen foods are thawed; there is "drip," and some of the natural juices leak out of the food. In the case of fish, where there is likely to be the greatest leakage, fast freezing and slow thawing minimize this loss. Very little leakage occurs during thawing of meats and poultry so mineral loss is negligible. The drip which may occur in fruits is contained in the syrup which is usually eaten along with the fruit, so there is no real

loss of minerals in this frozen product. In frozen vegetables the loss depends upon the way they are cooked; if the solidly frozen vegetables are dropped into a small amount of cooking water and the cooking water is consumed along with the vegetables, there is no loss of minerals; but if the cooking water is discarded, the loss may be slightly greater from frozen than from fresh vegetables.

There is conclusive evidence that frozen vegetables when served are as rich in vitamin C as fresh cooked vegetables. Since vitamin C is the most easily lost in preparation and preservation of foods, if a food has the normal vitamin C content, it is highly probable that the normal amounts of the other vitamins are also present.

Since vitamin C is easily oxidized near the boiling point, and this vitamin is also water soluble (leached out into water coming into contact with the vegetables), most of the vitamin C loss occurs during the blanching and cooling of vegetables during preparation for freezing. But there is less loss of this vitamin during the short cooking period of the frozen vegetable than there is during the longer cooking of the fresh vegetable, so the loss is counterbalanced.

The temperature under which the frozen vegetables are held in storage also affects the rate of loss of vitamins. It has been found that at 0° F. the loss was so very slight it was negligible.

Similarly, since no heating of the product occurs in the preparation of fruits for freezing, storage temperature is the factor governing vitamin C loss in fruits. Studies prove there is little loss of this vitamin in long-continued storage at 0° F.; however, should the storage temperature be maintained at 10° to 15° F. the rate of loss becomes rapid.

Summarizing the work done on the retention of carotene (vitamin A) in vegetables during preparation for freezing, freezing, and storage, studies indicate there is little loss of carotene during the preparation and freezing of most vege-

tables. However, there is some danger of loss of this vitamin during long-continued storage.

Vitamin B_1, or thiamin, is affected by heat and dissolved by water, so there is a loss of this vitamin in vegetables during blanching in preparation for freezing, but no actual loss was found during freezing itself and subsequent storage. Here again, this loss is counterbalanced by the loss during the longer cooking period of the fresh vegetable.

Studies on frozen peas, lima beans, asparagus, spinach, and broccoli in relation to freezing and loss of vitamin G (riboflavin) are variable and not complete enough for final conclusions. In some studies, riboflavin content of some frozen vegetables was more than the fresh equivalent; in some cases as much; at times, a loss has been indicated.

For many years, important studies about the freezing of foods and the nutritive values of frozen foods have been carried out. These researches are indicating many valuable facts about the merit of frozen foods, proving that foods lose little of their nutritive value during freezing and storage.

Frozen foods can—and probably will—have a marked influence on the collective health of our own country and that of the entire world. Freezing preservation is the greatest single food discovery in the history of food and man. Frozen foods make available for the first time the highest possible standard of diet at all times, under all conditions of living, climate, and economics. What's more, frozen foods are not only good for you—to paraphrase an overworked statement—but they're GOOD! Their appeal is universal because they taste and look so very much like freshly harvested foods; the appetite loses none of its sharpness when viewing the brilliant colors of frozen foods, colors as though nature had dug deep in the earth to endow them with something precious.

Beauty and goodness are always acceptable.

CHAPTER VI

Research Has a Hand in It, Too!

Most folks envision an impersonal, clinically white laboratory at the very mention of the word "research." But chemists and laboratories are only a part of the whole story of research and frozen foods.

Not just *any* fruit or vegetable can be put into the freezer and emerge after months of storage, tasting and looking so good you can't "tell the difference." Some vegetables are liable to be tough textured; others, pale and without much flavor. Fruits are apt to darken and turn slightly bitter in taste.

Neither can one determine easily just what causes any specific failure—when you have any, for there are five big factors which control quality. And, vice versa, these same factors also provide the reasons for any freezing failures you may encounter. The big five for quality are: variety of fruits and vegetables selected for freezing; maturity at which the product is harvested; speed from harvest to freezer; the proper packaging; and storage temperature at which the product is held until such time as it is eaten.

Food freezing knowledge, then, starts with the agronomist, the seedsman, the experimental farmer and his farm or experimental garden plot.

We go next into commercial freezing plants—actual processing plants and small experimental pilot plants where information develops daily on the newest freezing techniques and equipment.

We also must pay a visit to the manufacturing plants of home

freezing cabinets; here engineers work painstakingly to improve the design and the freezing capacity of their own make of freezer. Many home freezer companies have a research home economist on their staff to test their freezers under home conditions and to develop new ideas for the care and use of the freezer for you.

Throughout the land in almost every college and university some research is being done on improving all phases of freezing foods. Much of this work is supported jointly by the United States Department of Agriculture under the Research and Marketing Act and by the food industry. State agricultural experiment stations play a big part in this phase of the gleaning of more and more information about freezing and about home freezers.

So you see, there is a whole army of people, scientists, engineers, farmers, teachers, lockermen, cooks, and homemakers like yourselves, who have contributed to and continue to add to the lore of freezing.

YOUR GUIDE TO VARIETY

Have you ever visited your own state agricultural experiment station? It is an exceedingly interesting place, one that is continuously working for your benefit in things pertaining to agriculture. It is at the state agricultural experiment stations and the Bureau of Plant Industry, U. S. Department of Agriculture, where most of the work has been done in developing and determining the right kind of varieties of fruits and vegetables which will give the finest frozen product. These agencies, working in conjunction with seed houses, will be busy for years to come developing new strains of established varieties and also new varieties especially suited to freezing, for it may take as many as twenty to twenty-five years to get results in some cases. For instance, twenty-five years of development work at the

New York State Experiment Station, Geneva, New York, went into producing the Cortland apple, a variety which doesn't brown readily.

You will find your own state experiment station an excellent supplementary source of information for those varieties which are especially adapted to the climatic and soil conditions of your locality. Not all varieties of all fruits and vegetables, especially fruits, will grow as well in all localities.

Color is the key to preferred varieties for freezing and can also be used as a guide for selection when produce is not home grown, but purchased at market where the specific variety may not be known. Color not only helps the appearance of a fruit or vegetable, but it usually is an indication of more intense flavor, and, in some cases, a direct index of the vitamin content of a vegetable. So those varieties of vegetables having intense color are almost always better for freezing than varieties lacking in color. In blanching vegetables a portion of the flavor is washed out of the vegetable, so it is desirable to have enough flavor in the vegetables before you start to freeze them. Otherwise the frozen product will be anemic-looking and weak in flavor as well. Carrots, beets, corn, peaches, raspberries, strawberries—many of the fruits and vegetables can serve to illustrate this point. Carrots of the so-called "coreless" varieties produce a finer frozen product than those with pale centers; beets such as a Crosby Egyptian strain may have light streaks running through them, while a variety such as Detroit Dark Red is uniformly red throughout and therefore much preferred for freezing; the yellow sweet corn varieties are much superior for freezing than white varieties.

The variety of fruit used for freezing is almost more important than the variety of vegetable selected because it affects the frozen product even more. The fruit variety selected can mean either success or failure since some varieties are so greatly changed by freezing they barely make an edible frozen prod-

uct. Peaches provide a good example to illustrate this point. The common white peach variety, Champion, turns very dark during freezing and thawing and there is relatively little flavor in the frozen product. On the other hand, many yellow varieties, the J. H. Hale in particular, retain both color and flavor very well. The Sunbeam variety of yellow peach never discolors, but since it is not a good bearer this variety is not very popular. In those areas where the Cuthbert raspberry grows it is superior for freezing because it is of deep color and fine flavor.

Besides deep color in fruit, those varieties which produce a firm fruit when ripe and which do not darken quickly when cut or peeled are best for freezing.

Where fruits are home grown, variety presents more of a problem than it does with vegetables, since one cannot change fruit trees from year to year as one can vegetables. But there are two things you can do to get the right kind of varieties growing in your orchard: (1) enlarge your standing orchard to include a few trees of the right varieties; or (2) replace nonproductive trees and berry bushes with a good variety for freezing. Either of these measures would take several years before a crop could be harvested, but if you have access to freezing facilities in a locker plant or have a home freezer or are making plans to have one in the near future, these steps would doubtless be worth consideration now.

At the end of this chapter will be found a *Planting and Harvesting Guide* which gives lists of preferred varieties of fruits and vegetables for freezing together with additional information about stage of maturity desired for harvesting and comments concerning the freezing of each vegetable.

WATCH MATURITY

A popular misconception about frozen foods is that freezing performs a miracle; that it improves upon nature. Freezing

is the best method of food preservation but it will not transform not-so-good food into the essence of perfection, although under the proper conditions of packaging and storage it will retain most of the good color, flavor, and texture that is there to start with. So the condition of the fruits and vegetables you freeze will directly affect the quality of the frozen product. Old, starchy peas will taste old and starchy when frozen; tough asparagus will be tough when thawed and cooked; unripe peaches turn sour and bitter when frozen and browning and discoloration are more pronounced; soft, mushy strawberries will be more mushy and shapeless often with an undesirable off-flavor. But fruits and vegetables at the peak of their perfection—when they are best for eating—will be as perfect as freezing can keep them if the proper care is taken in preserving them.

This stage of maturity is called optimum maturity. It is when peas are sweetest, corn kernels are filled with milk that is sweet and not starchy, and snap beans have lots of "snap." When vegetables are purchased at a market and you have no control over their stage of maturity, it is better to select vegetables which are slightly immature rather than those which are likely to be tough or starchy.

The best description of the stage of maturity desired for fruits is a "soft-ripe but not mushy" condition, so that when they are thawed and used for dessert purposes they will have fine flavor, color, and texture. A much finer frozen product will also result if tree- and vine-ripened fruit is used wherever possible. Fruit picked green and left to stand until ripe will not give the same high-quality results, with the exception of pears which are better if picked green and allowed to ripen in storage.

Since some fruits may not mature uniformly, by picking over the trees a number of times one can get properly tree-ripened fruit which will give the best frozen product. If all are picked at one time regardless of whether or not all the fruit is ripe,

it will necessitate sorting out the unripe fruit and letting it stand to ripen before freezing it. This, as mentioned above, produces an inferior product.

In cases where fruit is too ripe for high-quality results, fruit juices or pulp (purée) may be successfully made and frozen if the soft, over-ripe fruit has not deteriorated in flavor. Instructions for freezing juices and purées are given on pages 138 to 145.

SPEED PRODUCE FROM HARVEST TO FREEZER

"Let no time be wasted or your produce may be" is a good adage to heed if you are out to freeze the best fruits and vegetables you possibly can. The lapse of time between garden and freezer can be one of the most ruinous things that can happen to good fruits and vegetables. So once produce is harvested, let no more time elapse than is absolutely necessary before you freeze it. The goodness in vegetables particularly (as has been pointed out in the previous chapter) can waste away rapidly. At normal summer room temperature, asparagus is materially affected within several hours losing flavor, sweetness, and becoming woody in texture; sweet corn rapidly loses its sugar content if any delay is encountered before freezing; if greens are allowed to wilt, most of their goodness has vanished. If vegetables and fruits cannot be frozen immediately after harvest, be certain they are refrigerated, then plan to freeze within 24 to 36 hours.

WHAT MAKES A GOOD PACKAGE?

Those attempting to freeze foods for the first time are apt to be hesitant about expenditures for the proper packaging materials for their foods and resort to the use of makeshifts which might happen to be at hand, such as ordinary ice cream containers or butcher's paper which may cost little or nothing. But

research and experience have proved beyond the shadow of a doubt that the few dollars and cents one may spend for the best packaging materials available are well worth the money considering that spoilage from improper packaging is likely to occur and represent more of a loss in the long run.

You see, foods cannot be put into the freezer without adequate protection from other foods which may give off-flavors, nor adequate protection against the low humidity (dryness) of a locker or home freezer. Because of the dry atmosphere, there would be so great a loss of moisture over a period of time that the quality of the food would be poor. Simultaneously with moisture loss, color, flavor, and texture also deteriorate. To protect foods in a freezer, materials must be specially made for packaging so they will be *proof* against moisture losses and vapor losses (exchange of flavors). Hence the term "moisture-vaporproof" commonly used when referring to packaging materials for freezing.

The early trial and error method in the development of such materials showed that ordinary waxed paper and butcher's paper were not adequate protection against drying out and deterioration of frozen products; that glass containers have the advantage of transparency, but the greater disadvantage of breakage; and neither metal nor glass containers stack well in a locker or freezer unless specially made for this usage. It was found that treated paperboard (specially waxed), moistureproof vegetable parchment paper, and special moistureproof Cellophane (which can be heat-sealed) made into containers, bags, and sheets for wrapping provide the proper protection needed. In recent years vastly improved packaging materials using paper-thin aluminum foil, rubber composition products, and paperboard-metal combinations have become available.

The Container Corporation of America was one of the first to

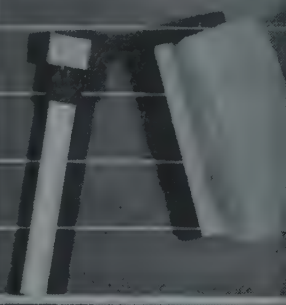
op) Pictured here are aluminum foil, and other types of moisture-vaporproof wrappers; also included is a stockinette for over wrapping.

ottom) Proper utensils and equipment—a plainly marked measuring cup, spoons and scoops, marking pens or china-marking pencils, heat sealers, funnels, and box holders.

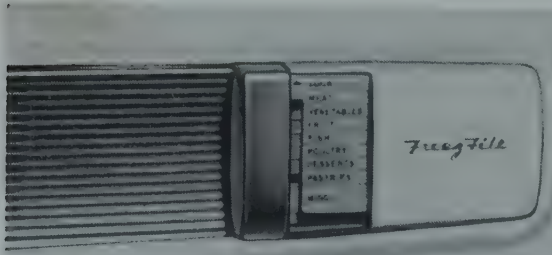
FREEZER INVENTORY

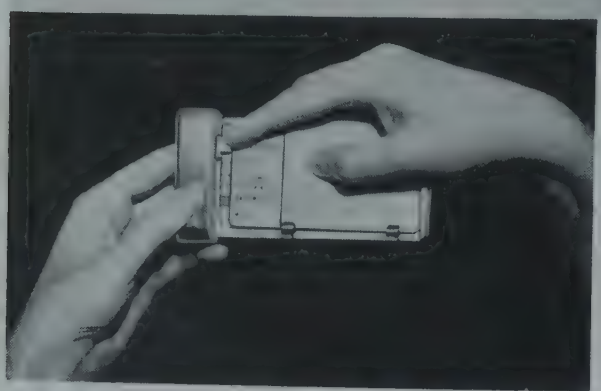
Maggie Mag

DATE	QUANTITY	ITEM	DATE	QUANTITY	ITEM
12/1	1	TURKEY - L	3/7	4	BEANS
12/8	6	STEAKS - R	4/9	6	ORANGE JU
12/4	12	PORK CHOPS - R	3/1	3	APPLE PIE
12/8	8	LAMB CHOPS - R	3/19	4 PKG	(6) ROLLS
12/14	6#	HAMBURGER - C	5/16	6 PTS	STRAWBER
2/10	4	CHICKENS - C	6/6	12 PTS	STRAWBER
3/15	2#	LIVER - C	9/20	2 QTS	CLAMS
12/19	6	DUCKS - R			
11/3	2	PHEASANTS - C			



A Maggie Magnetic Freezer Inventory Board comes equipped with magnetic eraser, magnetic chalk and chalk supply. Board measures 14 by 18 inches and tells at a glance what items are s





Here's the exclusive Westinghouse FRE FILE, featured on all models of t 1953 upright home freezers. The FRE FILE is located on the outside door (per left photo) where the homemaker determine what is in the freezer and wh it is located before opening the free door. To use the FREEZ-FILE, the u merely slides the file section from holder (upper right photo), and dials selector to the food classification she wa (lower left photo), and the file opens tells her where food is located, when froz and how much she has.

develop a composite fiberboard-metal carton, rectangular in shape with walls made of paraffin-impregnated fiberboard with an easy-to-handle snap-in metal lid. Pliofilm (made by the Goodyear Rubber Company) is a rubber composition material made into sheetings for wrapping foods, and bags for use inside folding cartons. Rubber composition materials can be recommended highly for their moisture-vaporproof qualities; also, they do not become brittle and tear easily at low temperatures. Polyethylene, a tough transparent plastic, is now available in sheet form, as well as in prefabricated bags. Both types of packaging are economical for home use, since they may be used over and over again. The Reynolds Metals Company has pioneered in perfecting an aluminum foil with excellent moisture-vaporproof qualities plus an oven-heating value for quickly thawing certain foods such as meats and baked goods right in the oven while the food is in the aluminum foil wrapping.

In order to insure complete protection, some packages must be sealed. Sealing tape has been recommended by some persons but this method of sealing a package is not nearly as efficient as the use of packaging materials which are self-sealing when heat is applied to the over-fold at the top of bag-liners in cartons, or at the overlapping edges of sheeting and waxed paperboard. Such "heat-sealing" can easily be accomplished with the tip of a warm—not hot—electric hand iron, an electric curling iron, or one of the new heat-sealing irons specially made for this purpose and which is sure to find a ready market among the new army of homemakers freezing foods on a large scale.

Besides moisture-vaporproof qualities in packaging materials, it is essential that cartons or containers for liquid or semi-liquid products such as fruits be water-tight as well, otherwise the liquid may seep through the package causing a good deal of trouble in the freezer.

Good packaging not only protects the foods but is economical of freezer space as well. Rectangular and cubical containers

stack well in a freezer and their use will enable more packages per cubic foot of freezer space. While tub and cup-shaped containers are not as economical of freezer space, they do stack well in a freezer and they also take up little cupboard space for empty storage if they "nest" like the Lily Tulip Cups.

Cartons (the folding type used with moisture-vapor-proof sheeting or bag-liners) and containers (already "set-up" and made with heavily waxed paperboard which is self-sealing) come in several types all of which are satisfactory.

ZERO FOR STORAGE

There is some difference of opinion as to the most desirable storage temperature for frozen foods. But actual experiment has proved that the lower the storage temperature, the longer the foods may be stored and the more nearly perfect they will be preserved in color, flavor, and nutrient content. At —40° F. there is no loss of nutrients in frozen foods at all; at —10° F. the loss is barely noticeable; at 0° F. the loss is very slow. But at 10° F. or more above zero, however, the loss is more rapid and within short periods of time definite off-flavors and rancidity are noticeable. At 0° F. most foods can be safely stored for at least one year with no appreciable loss in flavor, color, texture, or nutrient content.

Furthermore, storage temperature should be maintained at a constant low temperature and should not fluctuate widely from 0° F.

Vegetable	Comments about Freezing, or Quality of Frozen Product	Varieties Producing Best Frozen Product *Excellent and Very Good*	*Good*	Characteristics Indicating Best Time to Harvest
Asparagus	Makes a very good product if handled promptly after harvest; good color, flavor	Martha Washington Mary Washington	Palmetto Keystonian	Stalks well colored; tight, compact, tips. Brittle
Beans, Green Shell	The frozen green shell beans make a better, tastier product than the dried beans, and are a desirable vegetable to freeze when plenty of freezer space is available. Equivalent to lima beans in succotash	French Horticultural Lowe's Champion	Bountiful Giant Stringless Green Pod	Harvest while pods are still flexible, before pods become dry
Beans, Green Snap	The extra trouble it takes to grow pole beans will be well worth it, for Kentucky Wonder produces a frozen green bean superior in color and equal to the fresh in other respects (flat, podded beans preferred for French style; round podded preferred for cross-cut beans)	Kentucky Wonder (Pole) Blue Lake (Pole) Tendergreen (Bush)	Lowe's Champion (Bush) Wisconsin Refugee (Bush) Giant Stringless Green Pod (Bush) Topcrop (Bush)	Harvest before seeds become too prominent. Beans of good maturity should *snap* when broken

Vegetable	Comments about Freezing, or Quality of Frozen Product	Varieties Producing *Excellent and Very Good*	Best Frozen Product *Good*	Characteristics Indicating Best Time to Harvest
Beans, Lima[1]	One of the finest frozen products; freezing seems to emphasize color. Frozen limas taste as good as the fresh cooked	Fordhook (Bush) Fordhook 242 Early Baby Fordhook (Bush)	Burpee's Bush Clark's (Bush) Challenger (Pole) King of the Garden (Pole) Giant Podded (Pole) Dreer Bush (Bush) Henderson (Bush) Baby Potato (Bush)	The green beans are the tender, tasty ones; harvest when pods are well filled, but still green
Beans, Soy	Produces a very fine frozen vegetable. If you grow soy beans, plan to freeze at least a few packages	Giant Green Bansei	Hokkaido Willomi Sousei	Harvest when pods are well filled, but beans are still green
Beans, Wax[2]	Wax beans are somewhat lacking in flavor when frozen, and do not make as desirable frozen product as the green varieties	.....	.....	.....
Beets	If freezing space is limited, you may wish to can this vegetable	Detroit Dark Red Crosby	Other varieties are satisfactory but may be inferior in color	Young and tender, the fast-growing first of the season beets make the best frozen product
Beet Greens	These freeze well if selected when tender	Any variety	.....	Harvest when roots are just beginning to form

Broccoli	Since it is difficult to get a satisfactory preserved product by other means, you may wish to freeze this vegetable; it freezes well	Italian Green Sprouting Waltham No. 29 De Cicco	Other varieties satisfactory	Stalks bearing tight compact heads. Do not allow the bud clusters to flower before cutting
Brussels Sprouts	This vegetable freezes well and will lend variety to the contents of the freezer	.....	Half Dwarf Improved Long Island Improved Catskill	Dark green, compact heads should be harvested
Cabbage	Can be frozen and used only as a cooked vegetable, but is deliciously flavored, losing some of its strong flavor during blanching for freezing	.....	Savoy Copenhagen Danish Ballhead Other varieties also satisfactory	Select tight, compact heads still tinged with green
Cantaloupe	See Fruit, Muskmelon, p. 94			
Carrots[3]	Carrots freeze well, but where freezing space is limited, you may wish to store this vegetable in the cellar	Nantes Coreless Amsterdam Coreless	Red Cored Chantenay	The young, tender smaller carrots are best for freezing
Cauliflower	Freezes well in so far as flavor is concerned, but may develop a slightly, off-white color and be inferior to fresh in texture	Forbes White Mountain Perfection Super Snowball	Erfurt	Solid, well-formed snow white heads

[1] Beans, Lima: Burpee's Improved Bush is also a good variety. Henderson Bush and Clark's Bush are good, but are difficult to shell.
[2] Beans, Wax: Round Pod Kidney only variety recommended.
[3] Carrots: All other varieties freeze well, but may be inferior in color.

Vegetable	Comments about Freezing, or Quality of Frozen Product	Varieties Producing Best Frozen Product *Excellent and Very Good*	*Good*	Characteristics Indicating Best Time to Harvest
Celery	Can be frozen and used only as a cooked vegetable. Not recommended where space is limited	.....	Pascal Salt Lake Other varieties satisfactory	The green varieties have the best flavor
Chinese Cabbage	Gives a very tasty frozen product, but can be used only as a cooked vegetable	.....	Chihli	Heads well-formed and solid
Collards	One of the greens that freezes very well	.....	Any variety	Harvest when leaves are small and tender
Corn,[4] Sweet White	White sweet corn does not give the fine flavored frozen vegetable that yellow sweet corn does, but it is satisfactory in other respects for cut corn	.....	.....	Silk of ears will just be dry. Ears well developed, but kernels still are milky when tested with thumbnail
Corn,[5] Sweet Yellow	Freezes exceptionally well if care is taken in the selection and prompt handling. Some may be frozen on cob. Cut corn most desirable	Golden Cross Bantam 8-Row Golden Bantam Golden Bantam Golden Freezer	14-Row Golden Bantam Purgold Seneca Golden Maine Bantam Lincoln Indigold Aristogold Bantam Tendergold	Same as above

Cucumbers	Must be sliced very thin and covered with dilute vinegar—1 cup vinegar to 3 cups of water	.....	Any slicing variety	While still dark green. Before seeds are fully developed
Egg Plant	This product freezes well and is about the only way it can be preserved. A few packages lend variety to freezer contents	.....	Black Beauty New Hampshire Hybrid Early Long Purple	Pick when not too large so that seeds are tender and not prominent
Endive	Not particularly well suited to freezing	.....	.....	.....
Kale[6]	This vegetable produces only a fair frozen product. You may wish to omit it in favor of those that freeze very well	.....	.....	Leaves should be young and tender. Do not allow leaves to grow large and coarse
Kohlrabi	This product has color superior to the fresh and is the equivalent of fresh in flavor and texture	Early White Vienna	.....	This vegetable gets bitter and stringy when large and old. Harvest when young and tender
Lettuce	Not suited to freezing	.....	.....	.....
Mushrooms	This product freezes well and should be included in your freezer list if available and if space permits	Cultivated (*Agaricus campestris*)	.....	Should have white, tight caps; medium and smaller sizes best
Muskmelon	See Fruit, Muskmelon, p. 94			

[4] Corn, Sweet White: Crosby Hybrid (E-45-2) and Country Gentleman give a fair product.
[5] Corn, Sweet Yellow: Other varieties suitable only for cut corn.
[6] Kale: Tall Curled Scotch, and Dwarf Curled Scotch give a fair product.

Vegetable	Comments about Freezing, or Quality of Frozen Product	Varieties Producing Best Frozen Product *Excellent and Very Good*	*Good*	Characteristics Indicating Best Time to Harvest
Mustard Greens	Freezes well. Especially well liked in the South	.....	Florida Broadleaf Southern Giant Curled Fordhook	Cut when leaves are young and tender in spring
New Zealand Spinach	Frozen product mediocre	.....	.....	Young, small leaves
Okra	This vegetable is preserved better by freezing than any other way	.....	Green Velvet Perkins Long Pod Clemson Spineless Dwarf Green	Harvest when pods are young and tender. If stems snap when pods are broken from plant the pod will be tender
Parsnips	Makes an excellent frozen product. More mild in flavor than the fresh	Hollow Crown Marrowfat	.....	Mature parsnips which have been held in ground over the winter are best
Peas[7]	Much of the fine flavor of frozen peas is dependent on variety planted and stage of maturity harvested. Promptness in handling also important	Thomas Laxton Dark Podded Thomas Laxton Shasta Freezonian	Improved Gradus Gradus Laxton's Progress World's Record Glacier Stratagem Dwarf Alderman Hundredfold Stridealong Alderman (Telephone)	Slightly immature peas are better than those which are old and starchy. Try to harvest peas when young and sweet. Pods will be well filled but not tightly filled; pods will still be crisp and bright green in color

Peas, Blackeyed (Field Peas)	This vegetable freezes well	.....	Grand Ramshorn Bluegoose Crowder	Harvest when peas are well filled, but before they are dry. Pods are flexible but not dry
Peppers, Sweet	Although this vegetable loses its crispness when frozen it freezes well for use in any way one would use the fresh product in cooked dishes	.....	California Wonder Windsor	Peppers should be well formed and crisp. Any indication of soft spots points to over-mature product
Potatoes, Irish	This vegetable makes a satisfactory product; a few packages are handy for hurry-up meals and for enjoying new potatoes over a longer period	.....	Chippewa Katahdin Hoama Bliss Triumph Smooth Rural Green Mountain	Small new whole potatoes are dug when tubers are about 1 inch in diameter; they are frozen immediately. Vines are dry on mature potatoes; dig before a frost and let stand 30 days before freezing
Potatoes, Sweet	Mashed or puréed product best, for pies and baking dishes	.....	Porto Rico Nancy Hall Maryland Golden Yellow Jersey	Allow mature potatoes to age for 30 days before freezing
Pumpkin	Freezes very well. When this vegetable is home grown and freezer space permits, plan on freezing this product	All pie varieties	.....	Let pumpkin ripen on vine and harvest after first frost in the fall

[7] Peas: Good varieties also include President Wilson, Onward, Banqueteer, Asgrow 40, Laxton's Cropper, Teton, Laxtonian, Admiral Beatty, Wando, Victory Freezer, Morse's Market, Little Marvel, Lincoln, Early Dwarf, Wyola.

Vegetable	Comments about Freezing, or Quality of Frozen Product	Varieties Producing Best Frozen Product *Excellent and Very Good*	*Good*	Characteristics Indicating Best Time to Harvest
Radishes	Not suited to freezing	.....	.....	.....
Rhubarb	See Fruit, Rhubarb, p. 97			
Rutabagas	This vegetable freezes well and may be preferred instead of turnips if space permits freezing a wide variety of vegetables	.....	Long Island Improved American Purple Top Sweet German (Macomber)	Select those which are young and tender
Spinach[8]	Spinach freezes well. One of the favorites for freezing	Nobel Hollandia King of Denmark Viking Virginia Savoy (Fall Spinach) Northland	Old Dominion Princess Juliana Prickly Winter Viroflay Broad Flanders Long Standing Bloomsdale	Do not let spinach flower before cutting for harvest; cut when leaves are small and tender
Squash, Summer[9]	Does not yield a particularly desirable frozen product	.....	.....	Harvest while tender, before rind hardens

Squash, Winter	Squash freezes very well, but if freezer space is limited you may wish to cellar store it	Golden Delicious Golden Hubbard Butternut Buttercup	Green Hubbard Blue Hubbard	Allow squash to ripen until fully mature with hard rind
Swiss Chard	This vegetable also yields an excellent frozen product	Lucullus Fordhook Ruby	Other varieties	Cut when leaves are young and tender
Tomatoes	This vegetable does not produce a better frozen product than canned	.....	.....	Select fully matured, firm, vine ripened fruit
Turnips	Turnips freeze very well. Some of the strong flavor is washed out in the preparation procedure	.....	Purple Top Strapleaf White Globe Purple Top White Globe	Select those which are young and tender
Turnip Greens	Freezes very well	.....	Varieties grown especially for greens	Cut when leaves are young and tender
Watermelon	See Fruit, Watermelon, p. 97		best	

[8] Spinach: Victoria is also a good variety. In the East, the Savoy type spinach is superior to the broad leaf type; in the West, the broad leaf type is superior to the Savoy leaf type.

[9] Squash, Summer: Summer Crookneck, Early Prolific Straight Neck, and Zucchini give a fair product.

Key: 1—New England; 2—Middle Atlantic States; 3—Southern States; 4—Middle Western States; 5—California; 6—Pacific Northwest States; 7—Rocky Mountain States; 8—Southwestern States

Fruit	Varieties Producing Best Frozen Product			Maturity Characteristics
	Excellent	Very Good	Good	
Apples	Greening (1,2,4) Baldwin (1,2,4) Northern Spy (1,2,4) Rome Beauty (1,2,4) Stayman Winesap (1,2,4) York Imperial (1,2,4) Grimes Golden (1,3,4,7) Oldenburg (Duchess) (1,2,4,7)	Rome Beauty (6,7) Stayman Winesap (6) Jonathan (4,6,7) Wealthy (1,2,4,7) Yellow Newtown Pippin (6) Spitzenburg (6,7) Stark (2) Cortland (2)	Gravenstein (5) Yellow Newtown Pippin (2) McIntosh (2) Rome Beauty (5) Winsap (5,7) Starking (3)	Apples should be firm-ripe, and not mealy; skin should be tight, bright and free from dark spots
Apricots	Tilton (5,6,7) Blenheim (5,6,7)	Royal (5,6,7,8) Moorpark (5,6,7,8) Alamada (5)	.....	Firm-ripe fruit having good yellow color showing practically no green
Avocados (Purée only)	.....	.....	.....	Rind should be of good bright green color without dark blemishes, fruit should feel soft-ripe, not hard nor mushy
Blackberries and Dewberries	Boysenberries (3,5,6,7) Youngberries (3,5,6)	Loganberries (6) Early Harvest (3) Eldorado (3,4,7) Nectarberries (5,6)	Oregon Evergreen (6) Lucretia (3,6,8) Olympic (6)	Should be sweet, soft, and plump, with glossy skin

Blueberries	Atlantic (2) Pemberton (2) Dixi (2) Harding (2) Concord (2) Rubel (2) Pioneer (2) Rancocas (2) Cabot (2) Jersey (2)	Rancocas (6) June (6) Concord (6) Katherine (6) Jersey (6) Rubel (6)	Adams (2,6) Harding (6) Cabot (6) Grover Sam (6) Alaska Wild (6) Wild Low Bush (1) Wild High Bush (1)	Pick when sweet and soft
Cantaloupe	See Muskmelon, p. 94			
Cherries, Sour	Montmorency (2,3,4,6,7)	English Morello (2,3,4,6,7)	.....	Good bright red color, soft-ripe. Use only tree-ripened fruit
Cherries, Sweet	.....	Lambert (5,6,7) Bing (4,5,7) Black Tartarian (6,7)	Bing (2,6) Republican (6) Bacon (6) Napoleon (2,3,5,6) Windsor (2,4) Lambert (2,4)	Soft, sweet fully tree-ripened cherries
Cranberries	Howes (1,2,6) Early Black (1,2,6)	Other varieties satisfactory	.....	Deep red uniform color with glossy skin; pick when still firm, before berry gets mealy
Currants	Perfection (2,6)	Other varieties very good	.....	Bright red fruit, fully ripe with no green showing on any fruit in cluster
Figs	.....	Mission (5,6,8)	Kadota (5,6,8) Adriatic (5) Celeste (3)	Fully tree-ripened fruit best; soft-ripe but before fruit begins to split or become sour
Gooseberries	All varieties	.....	.....	Fully matured, soft, ripe berries best

Fruit	Varieties Producing Best Frozen Product Excellent	Very Good	Good	Maturity Characteristics
Grapefruit	Duncan (3)	Marsh Seedless (3) Seedling (3) Marsh Pink (3)	.....	Fully matured, tree-ripened fruit best. Heaviness indicates good maturity
Grapes	.....	.....	Muscadine (3) Muscat (6) Thomas (3) Thompson Seedless (6,8)	Grapes do not give a very good frozen product, but if it is desired to freeze this fruit, use only firm-ripe fruit, which has developed full flavor on the vine, for pies, juice, and jellies, or in mixed fruits.
Muskmelon or Cantaloupe	.....	.....	Beauty Osage (4) Bender's Surprise (4) Golden Gopher (4) Sugar Rock (2) Hale's Best (4,7,8)	Muskmelon is not one of the best products. Allow to ripen on vine. Use only soft full-slip melons
Nectarines	Stanwick (5,6) Gower (5,6)	New Boy (5,6)	.....	Proper maturity very important to retaining good flavor. Should be soft-ripe, same as peaches, but not soft or mushy

Oranges	Valencia (3,5)	Florida Pineapple (3) Seedling (3)	.....	.....
Peaches	J. H. Hale (1,2,3,4,5, 6,7,8) Hale Haven (1,2,3,4,6,7,8) South Haven (1,2,3,4) Candoka (6) Oriole (2) Primrose (2) Red Haven (2,3,4,8)	Eclipse (2) Elberta (1,2,3,4,5,6,7,8) Ideal (2) Massasoit (1,2) Marigold (1,2) Vedette (1,2) Viceroy (1,2) Veteran (1,2) Fireglow (2,4) Golden Jubilee (2,3,8) Rio Oso Gem (3,5,6,7) Indian Blood (5)	Eclipse (3) Oriole (3) Belle (3) Halberta (8)	Good maturity important for flavor; tree-ripened fruit best; pick when fully matured; soft ripe but not mushy; fruit should be well colored with no green discernible
Pears	.....	.....	Bartlett (1,2,5)	Since pears do not give a very good frozen product, particularly good care must be taken in selecting fruit which is neither too green nor too soft and mushy. Should be picked green and left stand to ripen. Good eating indicates best time to freeze
Persimmons	.....	.....	.....	Persimmons freeze best when pulp is puréed; select soft-ripe fruit
Pineapple	.....	.....	.....	Fully ripe soft fruit of good color; top leaves will pull out easily when fully ripe

Fruit	Varieties Producing Best Frozen Product			Maturity Characteristics
	Excellent	Very Good	Good	
Plums and Fresh Prunes	Italian Prune (5,6,7) Stanley (2,4) Hungarian Prune (2)	Redwing (2,4,7) Damson (2,3,4,7) Yellow Egg (2,4) German Prune (2,4) Italian Prune (2,4) Stanley (4) Albion (1) Santa Rosa (5)	.....	Proper maturity important for flavor and texture. Fully ripe, sweet fruit that is of good deep color without green. Soft but not mushy. Tree-ripened fruit essential
Pomegranate	.....	.....	.....	Select fully ripe fruit
Raspberries, Black	Bristol (6) Morrison (2)		Cumberland (3,4,6,7) Plum Farmer (6,7) Munger (6,7) Gregg (6,7)	Fully matured sweet soft-ripe berries, ripened on vine are best. Pick while berries are plump, before they begin to shrivel
Raspberries, Purple	Marion (2) Sodus (2,4,7) Columbian (2,6)	.....	.....	Soft-ripe fruit best
Raspberries, Red	Cuthbert (1,2,3,4,5,6,7) Herbert (1) Viking (2) Chief (2,3,7) Ranere (St. Regis) (2,3) Tahoma (6) Washington (4,6,7)	Ranere (1,6) Taylor (2,4,6) Lloyd George (2,6,7) Viking (4,6) Cayuga (6) Latham (2,3,4,6,7) Newburgh (6,7) Erskine Park (6)	Chief (4,6) King (6) Herbert (6) Antwerp (6) Utah (6) Marlboro (6)	Cuthbert best flavored variety but difficult to grow in many areas. Soft-ripe fruit best

Rhubarb	.....	McDonald (1,3,4,6,7,8) Ruby (1,3,4,7,8) Linnaeus (4,7) Victoria (4,7) Valentine (1,7)	.....	Select stalks well colored with red; the early spring cuttings give the finest frozen product
Strawberries	Marshall (1,6,7) Corvallis (6) Klondike (2) Vanrouge (2) Burgundy (2,4) Blakemore (3) Midland (1,2) Tennessee Beauty (2,3,4) Northwestern (6)	July Morn (2) Clermont (2) Chesapeake (2) Blakemore (2,3,4,7,8) Fruitland (2) Big Joe (2) Klondike (3,8) Gandy (4) Jersey Giant (4) Dunlap (4,7) Redheart (6) Klonmore (3) Red Rich (4)	Howard 17 (Premier) (1,3,4,7,8) Bliss (1) Big Late (2) Howard Supreme (1,2) Fairfax (2,3,6) Dorsett (2,3,6,7) Progressive (2,4) Redheart (2) Missionary (3,8) Parson's Beauty (4) Gibson (4) Aroma (4) Ettersburg #121 (6) Catskill (1,2,4) Culver (1,2)	Full red color is essential to good flavor; pick vine-ripened berries soft-ripe, but not mushy
Watermelon	.....	.....	.....	Can be frozen successfully only as a puréed product; select fully ripe, vine-ripened melons; red-fleshed varieties are best

CHAPTER VII

Step-by-Step Preparation

Vegetables, Fruits, Juices, Purées, Meats, Poultry, Fish, Shellfish, and Dairy Products

It is easy to freeze foods even if you have never before tried this new method of food preservation. Freezing will enable you to preserve a wider variety of foods than has been possible before. You will get surprisingly good results, for this is one thing which can be accomplished at home as successfully as it can be done on a commercial scale. But, in order to do this, the freezing rules must be followed carefully. Very briefly, they are:

1. Select proper kind and variety of food.
2. Watch maturity of produce; age of meat animals.
3. Plan to prepare for freezing immediately—or refrigerate.
4. First preparation step: prepare for table use.
5. Blanch vegetables; sweeten fruits.
6. Keep product chilled while working with it.
7. Give food adequate packaging protection.
8. Place packaged foods in freezer immediately—or refrigerate.
9. Freeze no more at one time than is recommended for your size freezer.
10. Maintain storage temperature at 0° F. or lower.

Five of these rules have been covered separately—variety selected, maturity, speed from harvest to freezer, proper pack-

aging, and storage temperature—because they are some of the most important factors affecting the success of your freezing venture, and it is best to have a thorough understanding of these freezing principles to insure success with the frozen product. Now let us take a look at the reasons for rules number 5, 6, 8 and 9 before proceeding with detailed directions.

Blanch Vegetables; Sweeten Fruits—Actually, what would happen to fruits and vegetables if they were harvested and frozen without being blanched or treated with sugar would be similar to that experienced when vegetables and fruits are frozen in the garden or orchard by an early frost. The product would be of very poor quality—hardly worth eating; it would retain neither flavor, color, nor texture. The reason for these objectionable changes is the action of enzymes which takes place in the vegetable and fruit tissue.

However, if enzymes are destroyed prior to freezing, the fresh characteristics can be preserved. As pointed out in a previous chapter, enzymes are destroyed by heat at the boiling point. This is easily accomplished in vegetables by heating the vegetable tissue in either boiling water or steam.

Since partially cooked fruits are not usually desired for dessert purposes, it would not be too satisfactory to heat fruit tissue to destroy enzymes. But their action is retarded either by use of dry sugar added to the fruit to make a syrup with juice drawn from the fruit, or by covering the fruit with a prepared sugar syrup. Treatment of fruits with sugar really performs a two-fold action in helping to preserve them: the sugar retards enzymic action during storage; the syrup formed by the solution of the sugar in the juice drawn from the fruit, or the syrup which is poured over fruit, covers the tissues and so retards oxidation (browning) by keeping air from coming in contact with fruit tissue.

Some of the latest research on the processing of frozen foods indicates that the addition of pure monosodium glutamate

(*Ac'cent*) to many foods prior to packaging and freezing greatly improves the quality of their flavor and even in some cases improves their color and storage qualities.

Keep Product Chilled While Working With It—Do not allow the product to warm up at any time after preparation has started. As explained previously, the temperature of a food has a direct bearing on loss of nutrients, the warmer the product the more rapid the loss. So it is advisable to start the preparation procedure with comparatively small quantities of food, carrying through to the point of freezing quickly. This is stressed here because of the usual preserving practice of preparing a bushel or two of vegetables or fruit at one time.

As with all rules, the exception to this one is with vegetables; they must be blanched. But—immediately after the vegetable has been blanched for the recommended period, place the vegetable in running cold water or water containing ice, if tap water does not run cold enough, to chill the vegetable down to below 60° F. Allow plenty of time for cooling the vegetable, for it takes at least as long to cool it as it does to blanch it.

Much of the success of your vegetable preparation procedure depends on the prompt and complete cooling of blanched vegetables to retain maximum quality in the vegetable. Oxidation, and loss of flavor and vitamins occur rapidly when vegetables are warm. Also, microorganisms which are the cause of spoilage, multiply rapidly. So if vegetables are not cooled down to at least 70° F., they not only lose flavor and nutrients, but there is danger of spoilage before they are frozen.

Place Packaged Foods in Freezer Immediately—or Refrigerate—Unlike canning, where filled and processed jars are left standing on a table to cool, do not allow packaged products to collect before they are placed in the freezer; but freeze them immediately. If freezing facilities are not at home, then place packages in the refrigerator until the lot can be transferred for freezing; and, if packages are placed in the

refrigerator before being transferred, be certain to remove them to the freezer at the first possible opportunity; do not, under any consideration, leave packaged products in the refrigerator for any length of time before transfer.

Even at 50° F., bacterial action is relatively rapid. Unless foods are promptly frozen spoilage is likely to occur; at best, the frozen product will develop off-flavor, loss of color, and nutrient content.

When packages are transferred from home to freezing facilities, do not allow the food to warm up during transfer. Pack the packages in a corrugated fiberboard carton for transportation.

Freeze No More at One Time Than Is Recommended for Your Size Freezer—If too many packages of unfrozen food are tightly packed in a freezer the rate of freezing is so slow that spoilage is likely to occur before the temperature of the food is brought down to 0° F. So do not plan to freeze more packages or pounds of products at one time than is recommended for your size freezer. Carefully follow the manufacturer's directions concerning this. However, if locker space is rented, or sharp freezing facilities of a locker plant are used for freezing, actual freezing of food can be undertaken on a much larger scale.

If products are frozen in a small home freezer (4 or 6 cu. ft.) usually no more than 10 or 15 pounds of food may be frozen at one time. Larger freezers of 24 or 36 cu. ft. size will freeze as much as 30 or 40 pounds at one time. After products are frozen, a home freezer may be packed tightly full of frozen packages for storage.

When freezing foods in a home freezer, much faster freezing takes place if packages are placed against the side walls or on metal freezing plates or shelves, and spaced so there is ample air circulation around packages while they are being frozen.

VEGETABLES

Not very much "special" equipment is needed to prepare foods for freezing at home other than the proper supply of packaging materials. Most of the equipment needed for preparing vegetables is regular kitchen utensils; some can even be improvised from articles on hand:

1. Sharp knives for trimming, paring, slicing, etc.
2. Necessary bowls or pans for washing vegetables.
3. Long-handled colander or wire mesh basket (similar to those used for French frying) in which to place the vegetables for the blanching operation.
4. A large preserving kettle of 6 to 12 quart capacity for blanching; or, a "steamer" consisting of a large kettle with a tight-fitting cover, fitted with a rack at the bottom on which the colander or wire basket containing the vegetables can rest for the steam-blanching operation.
5. Plenty of running cold water; or, ample amounts of ice for water to chill vegetables after blanching.
6. Packaging materials. (See illustrations facing page 104). The recommended cartons and containers for vegetables are: (A) Rectangular end-opening folding waxed carton equipped with bag-liner. (B) Rectangular top-opening folding waxed carton with liner. (C) Heavily waxed tub- and cup-shaped containers. (D) Tin can with slip-in lid and frosty finished outside. (E) Heavily waxed containers with plastic slip-on cover. (G) Rectangular top-opening folding waxed carton without liner, hence requires an outer heat-sealing wrapper.
7. An electric hand iron, curling iron, or heat-sealing iron for heat-sealing packages.
8. A cheesecloth-covered "block" to facilitate heat-sealing.

(This is helpful but not essential to good packaging. It can be made from any block of metal or wood, just so it is of a height that the top of bag-liners can be heat-sealed on top of it when the carton stands upright alongside the block.)

9. Frame-and-funnel to hold end-opening cartons upright and the bag-liner in shape while filling. (This, too, is helpful but not essential to good packaging. It may also be improvised from a tin can which has had the top and bottom smoothly removed and then shaped into an oblong "funnel" at one end.)
10. China marking pencil or soft crayon for labeling packages. Packages are labeled indicating contents, date packed, and name or locker number if locker plant service is used.

How to Blanch Vegetables Properly

Since blanching of vegetables is regarded as the most important step in their preparation for freezing, it is best to understand thoroughly the two methods of blanching: water-blanching and steam-blanching; and why sometimes one is recommended, and sometimes the other.

Water-blanching is the method when boiling water is used as the blanching medium. To water-blanch, only about one pound of vegetable at a time is put in a long-handled colander or wire basket which is then placed into boiling water for the recommended time. At the end of the blanching period the vegetables are removed and promptly cooled by running cold water or water containing ice.

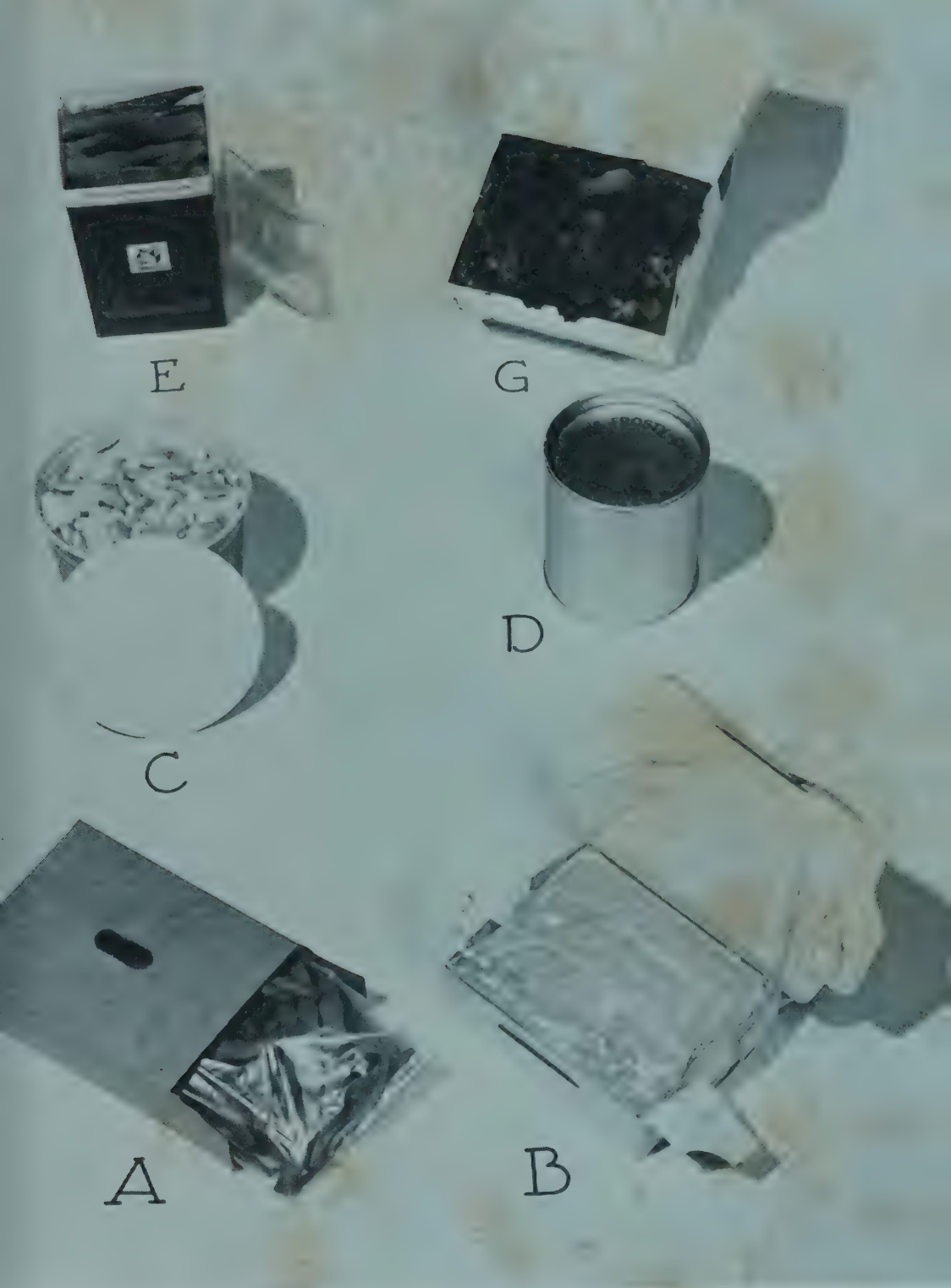
Steam-blanching is the method using steam as the blanching medium. In order to steam-blanch vegetables, a steamer, as previously described, must first be procured. To steam-blanch, water to the depth of about one inch in the bottom of the

steamer is brought to a full rolling boil; about one pound of the vegetable is placed in the wire basket or colander which is then placed on the rack in the steamer (over the boiling water); the steamer is covered tightly, and the recommended steaming time is counted. A good steamer should have a cover which fits tight enough to prevent steam from escaping freely.

Steam-blanching takes longer than water-blanching; usually from one to two minutes more time is required. But it is recommended in some instances rather than water-blanching because this method may preserve more water-soluble nutrients, especially when blanching cut-up vegetables such as Frenched green beans, diced turnips, etc. In the case of sweet corn, for example, much of the milk of the cut kernel would be leached out of kernels were the corn placed in boiling water to blanch, whereas there is little milk lost during steaming the cut kernels. Likewise, more of the water-soluble vitamins of the vegetable may be dissolved when blanching is done in boiling water rather than by steam.

On the other hand, boiling water blanches more uniformly such vegetables as spinach, kale, Swiss chard, turnip and beet greens, and broccoli.

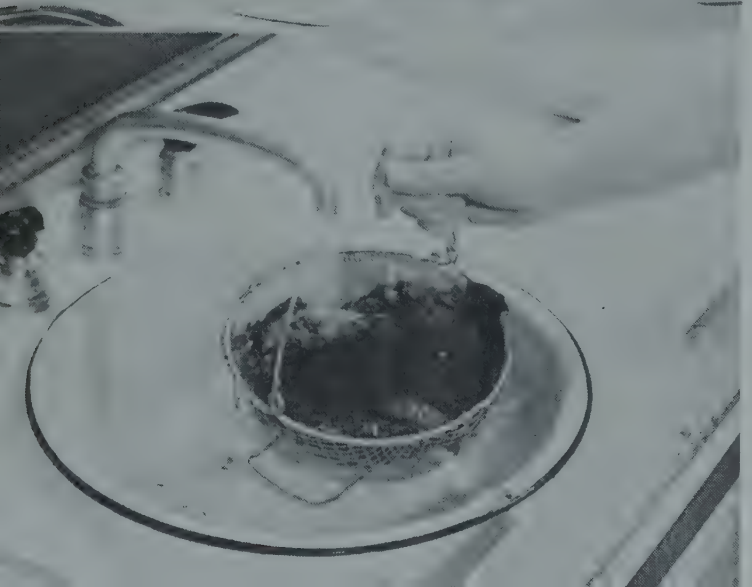
There are four precautions to take in order to insure proper blanching; and it must be remembered that adequate blanching is important, otherwise quality may be poor: (1) Be sure that the water has come to a full rolling boil *before* vegetables are placed in the blanching medium. (2) Time the procedure accurately with the second hand of a watch or clock and count the time *only* from the time the water again comes to a full rolling boil *after* vegetables have been put in place. Accurate timing is important to prevent both under- and over-blanching. Under-blanching is likely to result in spoilage; over-blanching causes a great loss in color, flavor, and nutrients and the frozen product will be of poor quality. (3) Adequate water-blanching



Types of packaging for freezing vegetables: A. Waxed end-opening folding carton with heat-sealing bag-liner; B. Waxed top-opening folding carton with moistureproof Cellophane liner; C. Heavily waxed Lily Tulip frozen food container; D. Heekin's Frosty Can with snap-on cover; E. Heavily waxed Vapocan with plastic slip-on lid; G. Top-opening folding waxed carton which requires a heat-sealing outer wrap.

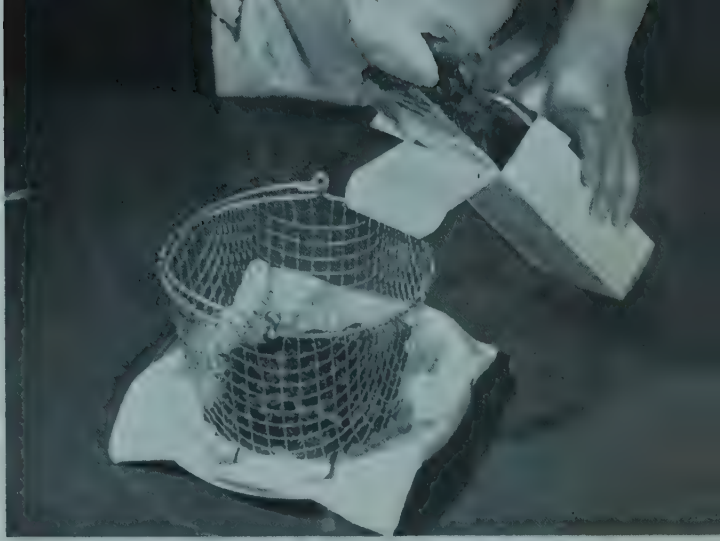
First step in preparing vegetables for freezing: Wash thoroughly in cold running water, trim carefully to remove all discolored or damaged parts so as to be of perfect quality for table service.

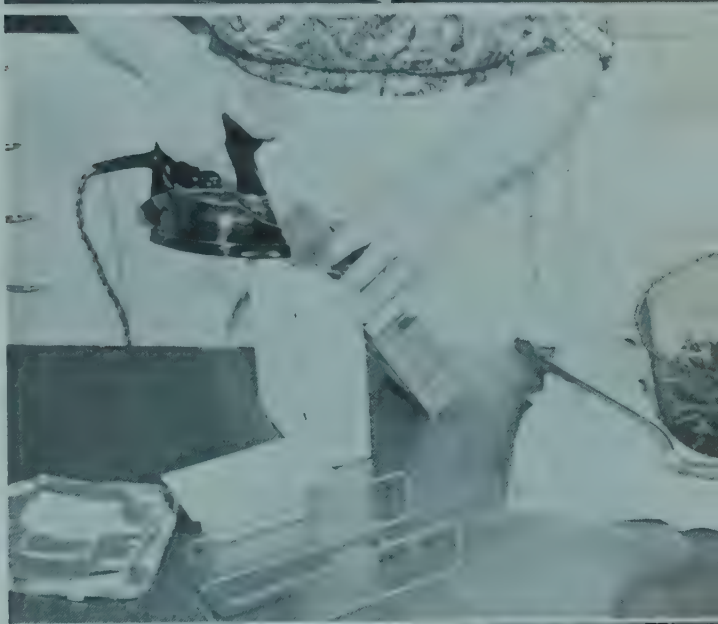
Second step: Blanching. Water-blanching is illustrated. Be sure to use a large quantity of water and a small amount of vegetable. Have water boiling rapidly, then immerse vegetables. Count blanching time *after* water returns to boiling point.



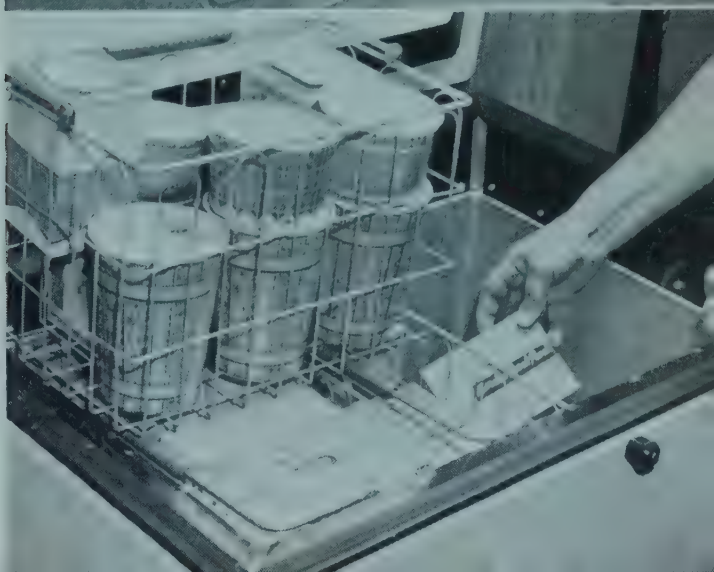
Third step: Chilling. The importance of this step cannot be over-emphasized. If tap water is not cold enough, add ice. Completely immerse vegetables until thoroughly chilled.

Fourth step: Packaging. Select container suitable to size and shape of product. For dry pack fill package full—except for greens. During freezing, greens may bulge and break the seal if packed too full.

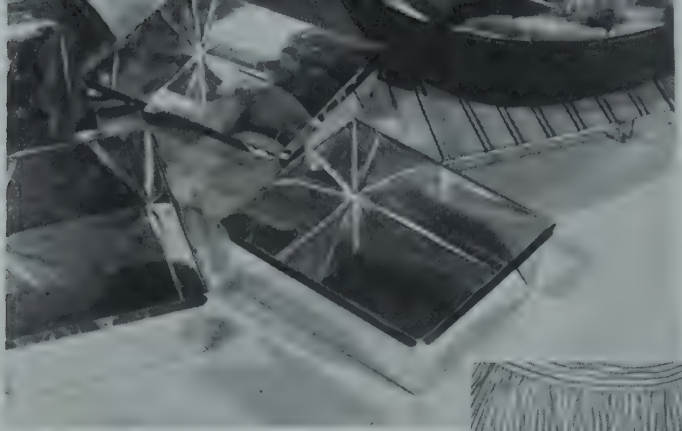




Fifth step: Sealing. With bag-in-box type carton, the tip of warm iron is pressed over double fold in top of bag and carton is closed. Label carton carefully, indicating contents and date packed.

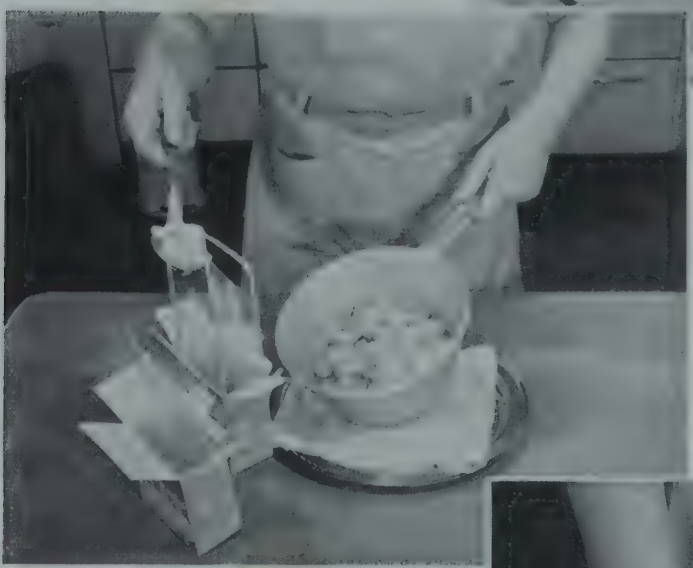


Sixth step: Freezing. Place packages in freezer immediately and follow manufacturer's freezing directions carefully.



(Left) Preparing candied swee potatoes for freezing: Candy swee potatoes according to your favorit recipe. Then pack them in tray type aluminum freezing container (as shown). Pour remaining syru over sweet potatoes. Cover, label freeze. To use: Place in preheate 425° F. oven for 45 minutes.

(Right) A new wrinkle in freezing corn on the cob—Wrap each ear in heavy weight freezer aluminum foil. Place wrapped ears in rapidly boiling water and blanch 8 minutes. Chill 1½ times longer than blanching time. Freeze as usual. To reheat, place in cold water and bring to the boiling point. Corn thaws while water is heating. (*Photo courtesy of Reynolds Metals Co.*).



(Left) Minted carrots, parsley car rots, and French style carrots wit shredded onion are a few of the extra special ways of serving this colorful vegetable.

(Right) When vegetables are shredded, cubed, sliced, or Frenched, as these potatoes for French frying, it will conserve nutrients to blanch by steam rather than with water.

cannot be accomplished if too many vegetables are blanched in too little water in too small a vessel; just so, adequate steam-blanching cannot be accomplished unless enough heat is available to produce a large quantity of steam rapidly. Therefore only small amounts should be blanched at one time in a large quantity of boiling water or steam. For this reason a 6- to 12-quart kettle is recommended for water-blanching, using at least one gallon of water per pound of produce. At least a 6-quart kettle is recommended for steam-blanching one pound of vegetables. (4) So that all surfaces of the vegetables are uniformly treated during water-blanching, agitate the basket or colander containing the vegetables. This is especially important in the case of leafy greens such as spinach, the leaves of which have a tendency to mat down and stick together preventing uniform blanching if the product is not agitated during the blanching period.

If you live at an altitude of over 2,500 feet, additional time will have to be given the blanching period in order to adequately blanch vegetables. At altitudes of from 2,500 to 5,000 feet, blanch vegetables one-half again as long as the recommended times given for blanching on pp. 108–123; at altitudes over 5,000 feet, blanch vegetable twice as long.

Brine vs. Loose vs. Dry Pack

There has been conflicting—and sometimes inaccurate—information published about the three different ways of packaging vegetables for freezing. For example, information has been widespread that unless vegetables are packaged in a brine solution (salt and water) they will not keep in storage for longer than 3 to 6 months. Actually, this is not true, proven so by freezer tests. It is the *storage temperature* and not the brine solution which is the governing factor for length of storage. Information has also been circulated that much of the nutritive

value of vegetables is lost if they are packaged in brine solution. Neither is this statement altogether true. *If* the vegetables are cooked in the brine and the brine served and eaten along with the vegetables the water-soluble nutrients dissolved into the brine will be consumed, no more being lost than in other methods of freezing vegetables.

An attempt is here made to explain the procedure of each method and discuss their relative values, leaving the ultimate decision of packaging procedure up to the reader, although in the authors' opinion the dry packaging of vegetables has the most advantages.

Dry Pack—When vegetables have been blanched, cooled, and drained, merely fill the cartons or containers full with the vegetable, close the package, heat-seal if necessary, and label. Dry-pack vegetables (except greens which pack solidly and consequently require headspace) should be filled to the top of the carton or container, leaving as little air space in the package as possible. There is no need to allow headroom for expansion during freezing as this pack does not expand appreciably when frozen.

There are no apparent disadvantages to the dry-pack method of packaging vegetables. It is the easiest way to package vegetables. Texture and color seem to be retained at least as well as when the brine pack is used. And since it is recommended that frozen vegetables be cooked when frozen or partially frozen, the dry pack vegetables are easier to remove from some types of containers than those packed in brine.

Brine Pack—Fill packages to within $^3/_4$ to 1 inch from top to allow headroom for expansion of the brine during freezing. Prepare a brine solution of 1 teaspoon salt to each cup of cold water; pour brine over vegetables just to cover; close package, heat-seal if necessary, then label.

When packaging vegetables with brine, be certain that bag-

liners used with folding waxed cartons are water-tight and that heavily waxed containers using no liners are also water-tight.

Salt seems to accelerate rancidity in some vegetables producing objectionable off-flavors within considerably short storage periods. And some vegetables such as spinach will become soupy because of the additional liquid on the vegetable.

If brine-pack vegetables are frozen, less salt—sometimes none—is added to the vegetable at cooking time. Also, cook vegetables in the brine in which they were packed without adding more water unless the vegetable boils dry, so that none of the nutrients dissolved into the brine will be lost. It also takes brine-pack vegetables slightly longer to thaw and cook for there is more liquid which has to be thawed and brought to the boiling point.

Loose Pack—This is a more detailed procedure for home freezing, although peas, beans, and lima beans have been frozen by loose pack very successfully.

To freeze vegetables by the loose-pack method (after blanching, chilling, and draining), spread vegetables out on small trays (or pie tins), place in freezer to freeze; then remove trays and scrape the frozen vegetables loose and pack in cartons or containers, filling them full; close package, heat-seal if necessary, label, and place in the freezer for storage.

Loose-pack vegetables can be frozen very successfully in a home freezer, but as can be seen by the above procedure, it takes more time and requires much more trouble. In addition, more storage space is required for loose-pack vegetables since the frozen vegetables do not pack as compactly as the unfrozen ones. For instance, a carton which will hold 12 ounces of cauliflower when dry packed, will hold only 8 or 9 ounces when loose packed. Vegetables frozen in this manner offer no cooking problem; they are handled the same as dry pack vegetables.

APPROXIMATE YIELD OF FROZEN VEGETABLES FROM FRESH*

Vegetable	Fresh, as harvested or purchased	Frozen
Asparagus	1 to 1½ lb.	1 pt.
	1 crate (12 2-lb. bunches)	15 to 22 pt.
Beans, lima (in pods)	2 to 2½ lb.	1 pt.
	1 bu. (32 lb.)	12 to 16 pt.
Beans, snap, green, and wax	⅔ to 1 lb.	1 pt.
	1 bu. (30 lb.)	30 to 45 pt
Beets (without tops)	1¼ to 1½ lb.	1 pt.
	1 bu. (52 lb.)	35 to 42 pt.
Broccoli	1 lb.	1 pt.
	1 crate (25 lb.)	24 pt.
Brussels sprouts	1 lb.	1 pt.
	4 qt. boxes	6 pt.
Carrots (without tops)	1¼ to 1½ lb.	1 pt.
	1 bu. (50 lb.)	32 to 40 pt.
Cauliflower	1⅛ lb.	1 pt.
	2 medium heads	3 pt.
Corn, sweet (in husks)	2 to 2½ lb.	1 pt.
	1 bu. (35 lb.)	14 to 17 pt.
Eggplant	1 lb.	1 pt.
Peas (in pods)	2 to 2½ lb.	1 pt.
	1 bu. (30 lb.)	12 to 15 pt.
Peppers, green	⅔ lb. (3 peppers)	1 pt.
Potatoes, sweet	⅔ lb.	1 pt.
Pumpkin	3 lb.	2 pt.
Squash, winter	3 lb.	2 pt.

* Courtesy of U. S. D. A., from Home and Garden Bulletin No. 10.

Directions for Preparing Vegetables

Following is the step-by-step procedure for freezing all vegetables, except those which are not recommended for freezing. For information concerning these, turn to the *Planting and Harvesting Guide* on pp. 83 to 97.

ARTICHOKES, GLOBE

Prepare: Outer bracts should be pulled from the globe artichokes until the inner light yellow or white bracts free from all green are reached. The tops of the buds should be cut off and the

butt trimmed to a cone. As soon as they have been trimmed, the hearts should be submerged and washed in cold water.

Blanch: For 7 minutes in boiling citric acid solution prepared by dissolving 1 tablespoon citric acid (or $^1/_2$ cup lemon juice) in 3 quarts water.

Chill: In running cold water for about 5 minutes.

Package: B, D, and G types recommended.

A few packages in your freezer will provide wonderful company fare for special occasions.

ASPARAGUS

Prepare: Since asparagus toughens quickly and loses flavor rapidly after harvest, it is advisable to freeze this vegetable within 2 or 3 hours after cutting, if at all possible. Use only upper 6 inches of spear; separate spears into small stalks ($^3/_8$ to $^3/_4$ inch butt-end) and large stalks ($^3/_4$ to 1-inch butt-end). Trim stalks, wash in cold water. If cut up spears are desired, cut stalks in 2-inch pieces before blanching.

Blanch: Steam-blanch preferred; although a satisfactory product can also be obtained by water-blanching.

Steam-blanch small stalks: $3^1/_2$ minutes; large: $4^1/_2$ minutes.

Water-blanch small stalks: 3 minutes; large: 4 minutes.

Chill: In running cold water for 3 to 5 minutes.

Package: A, B, and D types recommended for cut-up asparagus; D or G type for whole spears.

If you have a bed of asparagus freeze every tender tip you don't use fresh, then enjoy it months later.

BEANS, GREEN SHELL

Prepare: Shell the beans, but do not wash them after being shelled. It is best to shell a quantity before starting the blanching procedure.

Blanch: Steam-blanching preferred; more flavor and nutrients retained.

Steam-blanch: 105 seconds.

Water-blanch: 60 seconds.

Chill: In cold running water for about 3 minutes.

Package: A, B, C, D, and E types recommended.

Frozen shell beans are much more flavorful than those dried.

BEANS, GREEN SNAP

Prepare: Broken snap beans also lose their fine flavor and texture rather rapidly after harvest; freeze them within a few hours if at all possible. Wash them free of soil and foreign particles in cold running water; snip off tips; cut in 1-inch lengths for cut beans; small beans (3 to 4 inches long) may be frozen whole; or, the beans may be Frenched by slicing lengthwise either by hand or by putting them through a French slicing utensil.

Blanch: Water-blanch preferred for cut or whole beans; steam-blanch for French style.

Water-blanch cut beans: 2 minutes; whole: $2^1/_2$ minutes; Frenched: not recommended.

Steam-blanch cut beans: 3 minutes; whole: $3^1/_2$ minutes; Frenched: 2 min.

Chill: In cold running water for from 3 to 5 minutes.

Package: A, B, C, and D types recommended.

Green snap beans may be used instead of limas with kernel corn for succotash.

BEANS, LIMA

Prepare: Some varieties of lima beans are exceedingly difficult to remove from pods; a pair of kitchen shears may be used to cut off tough edges of pods, giving easy access to beans. Do not wash beans after being shelled, but shell a quantity before beginning blanching.

Blanch: Water-blanch preferred.

Water-blanch small: 1 minute; medium: $1^1/_2$ minute; large: 2 minutes.

Steam-blanch small: 2 minutes; medium: $2^1/_2$ minutes; large: 3 minutes.

Chill: Immediately immerse in running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

You may wish to save some of your limas to freeze with kernel corn for very delicious succotash.

BEANS, SOY

Prepare: Soy beans are difficult to shell, but if pods are scalded in boiling water for about 4 minutes and then cooled in running

cold water, this task is made much easier. No further blanching is necessary, but be sure to completely cool the beans for at least 5 minutes before shelling them. They can be shelled directly into cartons or containers for freezing.

Package: A, B, C, D, and E types recommended.

BEANS, WAX

Follow directions given for Beans, Green Snap, page 110.

BEETS

Prepare: Cut tops off beets, scrub well in cold running water. Beets which are very small and tender (maximum $1^1/_2$ or $1^3/_4$ inch in diameter) may be frozen whole; pare small whole beets before blanching. Blanch all others in the skins.

Blanch: Whole beets—steam-blanch (preferred): $3^1/_2$ minutes; water-blanch: $2^1/_2$ minutes. All other beets—*Cook until tender.*

Chill: Whole beets—in running cold water for about 5 minutes. Other beets—in running cold water for about 5 minutes; then rub off peels and slice or dice directly into packages for freezing.

Package: A, B, C, D, and E types recommended.

BEET GREENS

Prepare: Prepare for freezing just as soon as possible after harvesting. Wash thoroughly in running cold water to eliminate soil and foreign particles. Discard any coarse or yellow leaves.

Blanch: Water-blanch preferred; agitate basket during blanching period.

Water-blanch: 2 minutes.

Steam-blanch: 3 minutes.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

BROCCOLI

Prepare: Wash thoroughly in running cold water, eliminating coarse leaves. Cut head into pieces not thicker than 1 inch and not longer than 5 to 6 inches. Separate into small, medium, and large for blanching.

Blanch: Water-blanch preferred; agitate basket during blanching period.

Water-blanch small: 3 minutes; medium: 4 minutes, large: 5 minutes.

Steam-blanch small: 4 minutes; medium: 5 minutes; large: 6 minutes.

Chill: In running cold water for 4 or 5 minutes.

Package: B or G type recommended.

BRUSSELS SPROUTS

Prepare: Cut sprouts from main stem; wash thoroughly in running cold water; trim off outer coarse leaves; discard insect-infested sprouts.

Blanch: Water-blanch preferred.

Water-blanch: 4 minutes.

Steam-blanch: 5 minutes.

Chill: From 6 to 8 minutes in running cold water.

Package: B, C, D, and E types recommended.

Freezing gives new interest to this vegetable, because up to now there has been no satisfactory way of preserving it.

CABBAGE

Prepare: Trim outer coarse leaves from heads; then either shred heads medium to coarse on cabbage shredder, or with sharp knife separate into "leaves."

Blanch: Steam-blanch preferred.

Steam-blanch: 2 minutes.

Water-blanch: $1^1/_2$ minutes.

Chill: Shredded cabbage 2 minutes; leaves 3 minutes, in running cold water.

Package: A, B, C, D, and E types recommended.

Remember this vegetable frozen can be used only in cooked dishes, but it makes a very fine product, mild tasting and tender textured.

CANTALOUPE

This product is treated like fruit and directions for preparing it are given under Muskmelon, p. 134.

CARROTS

Prepare: Top, and wash in running cold water; scrape. Small, tender carrots may be frozen whole; or may be cut into $^1/_4$-inch slices; or Frenched if a French slicing utensil is available (run carrots through slicer lengthwise).

Blanch: Water-blanch preferred.

Water-blanch Frenched: 2 minutes; slices: 3 minutes; whole: $4^1/_2$ minutes.

Steam-blanch Frenched: 2 minutes; slices: 3 minutes; whole: $4^1/_2$ minutes.

Chill: In running cold water for about 5 minutes.

Package: B or G type recommended for whole carrots; A, B, C, D, and E types for sliced.

If you plan to freeze vegetable mixtures, save some of your young, tender carrots for peas and carrots, and with any mixture of your own choosing.

CAULIFLOWER

Prepare: Prepare head as for table use, cutting head into pieces not thicker than 1 inch. Separate pieces into small and medium before blanching.

Blanch: Water-blanch preferred.

Water-blanch small: 3 minutes; medium: 4 minutes.

Steam-blanch small: 4 minutes; medium: 5 minutes.

Chill: In running cold water 4 to 5 minutes.

Package: B or G, C, D, and E types recommended.

CELERY

Prepare: Trim stalks for table use, washing thoroughly in running cold water. Cut stalks into 1-inch pieces.

Blanch: Cook until tender using either steam or small amount of water.

Chill: Float pan containing vegetable in cold water, stirring frequently until completely cooled.

Package: A, B, C, D, and E types recommended.

This vegetable, too, can be used only for cooked dishes when frozen, but there will be many times you will be glad to have a few packages in the freezer.

CHINESE CABBAGE

Prepare: Cut individual leaves from stem; wash thoroughly in running cold water to eliminate soil and foreign particles; discard outer leaves which may be bruised.

Blanch: Water-blanch preferred; agitate basket during blanching period.

Water-blanch: 70 seconds.

Steam-blanch: 2 minutes.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

You may be familiar with Chinese cabbage flavor in wonderful salads, but as a frozen and cooked product it may be a new experience for you. Try it.

COLLARDS

Prepare: Wash thoroughly in running cold water, cutting out and discarding stem and coarse leaves.

Blanch: Water-blanched preferred; agitate basket during blanching period.

Water-blanch: 2 minutes.

Steam-blanch: 3 minutes.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

If your family is addicted to greens in any form, this is a vegetable which should be included on your freezing list. It freezes well, retaining fine flavor.

CORN, SWEET

Prepare: Sweet corn loses texture and flavor rapidly after harvest, so freeze as soon as possible. Husk, eliminating under- and overmature ears. It is strongly recommended that corn be blanched first on the ears, then cut for kernel corn, otherwise milk loss is likely to be great and much of the flavor is lost.

Blanch: Steam-blanch preferred; blanch no more than 6 ears at a time.

Steam-blanch small ears: $6^1/_2$ minutes; medium: $8^1/_2$ minutes; large: $10^1/_2$ minutes.

Water-blanch small ears: 6 minutes; medium: 8 minutes; large: 10 minutes.

Chill: In running cold water for at least 10 to 15 minutes.

Package: Corn on cob—Wrap each ear individually in moisture-proof Cellophane, then pack in large rectangular folding carton, overwrap with Cellophane, heat-seal.

Whole Kernel Corn—Cut kernels from cob, cutting deep enough to get whole kernels; separate bits of cob by washing in large pan of cold water, then letting kernels settle to bottom of pan and skim out pieces of cob on or near surface with sieve or colander; package in A, B, C, D, and E type packages.

Alternative Procedure: If you prefer to cut kernels from cob before blanching, steam-blanch not more than one cup of cut corn at a time, steaming for $2^1/_2$ minutes. Cool immediately in running cold water for about 5 minutes; eliminate pieces of cob as described above; drain and package.

EGG PLANT

Prepare: Peel; either slice in $^1/_3$-inch slices, or dice in $^1/_3$-inch cubes.

Blanch: Water-blanch preferred.

Water-blanch: 4 minutes.

Steam-blanch: 5 minutes.

Chill: First dip it momentarily in a 2 per cent citric acid solution. Prepare citric acid solution by dissolving 1 tablespoon citric acid (or $^1/_2$ cup lemon juice) in $2^1/_2$ pints cold water. Then chill in running cold water for 4 minutes.

Package: B or G type recommended for slices; A, B, C, D, and E types for cubes.

KALE

Prepare: Wash thoroughly in running cold water; cut off and discard main stem.

Blanch: Water-blanch is preferred; agitate basket during blanching period.

Water-blanch: 70 seconds.

Steam-blanch: 2 minutes.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

KOHLRABI

Prepare: Cut off tops; wash thoroughly in running cold water; peel, then dice in $^1/_2$-inch cubes.

Blanch: Steam-blanch is preferred.

Steam-blanch: 100 seconds.

Water-blanch: 60 seconds.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

MIXED VEGETABLES

Prepare: Each vegetable must be prepared separately including the blanching, blanching each vegetable according to the time given for each. After blanching and chilling, vegetables are mixed together and packaged.

Combinations: For succotash use equal portions of kernel corn and either lima beans, soy beans or green snap beans; use equal portions also for peas and carrots.

For mixed vegetables a combination of $1^1/_4$ cup kernel corn, 1 cup green beans, 1 cup carrots, $^3/_4$ cup lima beans, and 1 cup peas makes a good mixture. If desired, $^1/_2$ cup celery and $^1/_2$ cup turnips may be added to the above combination. In preparing such a vegetable mixture as here suggested, you will find the season for peas is usually over by the time such vegetables as corn or lima beans come in. In such cases, use the required amount of peas from your supply of the frozen vegetable, allowing them to thaw partially before mixing with the other freshly blanched and chilled vegetables.

Package: A, B, C, D, and E types recommended.

MUSHROOMS

Prepare: During pulling and trimming, care should be taken to prevent bruising since bruised mushrooms soon discolor. They deteriorate rapidly after harvest, so should be prepared and frozen the same day they are picked. Wash thoroughly in running cold water to remove soil, cut off base of stem. They may be frozen as large whole mushrooms, as buttons, or as sliced mushrooms. Sort whole and button mushrooms into small and large sizes for blanching.

Blanch: Steam-blanch preferred. Be careful not to over-blanch for it can cause excessive shrinkage.

Steam-blanch slices: 3 minutes; small: $3^1/_2$ minutes; large: $4^1/_2$ to 6 minutes.

Water-blanch slices: 2 minutes; small: 3 minutes; large: 4 to $5^1/_2$ minutes.

Chill: First chill mushrooms in running cold water for 2 minutes, then cool them in a 2 per cent citric acid solution (prepared by dissolving 1 tablespoon citric acid or $^1/_2$ cup lemon juice in $2^1/_2$ pints cold water) for 2 minutes. Then chill again in running cold water for 2 minutes. Drain well (15 to 20 minutes) before packaging.

Package: B or G type recommended for whole or buttons; A, B, C, D, and E types for slices.

Mushrooms freeze very well, and there's no denying the advantage of having a few packages of them in the freezer to add that epicurian touch for otherwise plain fare.

MUSKMELON

This product is treated like fruit and directions are given under Fruits, p. 134.

MUSTARD GREENS

Prepare: Wash thoroughly in running cold water to rid leaves of dirt; cut off and discard main stem of leaves.

Blanch: Water-blanch preferred; agitate basket during blanching period.

Water-blanch: 50 seconds.

Steam-blanch: 90 seconds.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

NEW ZEALAND SPINACH

Prepare: Wash thoroughly in running cold water to rid leaves of dirt; cut off and discard main stem.

Blanch: Water-blanch preferred; agitate basket during blanching period.

Water-blanch: 70 seconds.

Steam-blanch: 2 minutes.
Chill: In running cold water for about 5 minutes.
Package: A, B, C, D, and E types recommended.

OKRA

Prepare: Wash young, tender pods thoroughly to clean off soil; cut off stems. Separate into small and large pods before blanching.
Blanch: Steam-blanch preferred.
Steam-blanch small pods: 3 minutes; large pods: 4 minutes.
Water-blanch small pods: 2 minutes; large pods: 3 minutes.
Chill: In running cold water for about 5 minutes.
Package: B or G, C, D, and E types recommended.

PARSLEY

Prepare: Wash, sort, and remove tough, coarse stems.
Blanch: Water blanch 15 seconds.
Chill: In running cold water for about 2 minutes.
Package: A, B, D, E. or G types recommended.

PARSNIPS

Prepare: Cut off tops, wash thoroughly in running cold water; peel, then dice in $^1/_2$-inch cubes; or, split lengthwise in slices $^3/_4$-inch thick.
Blanch: Steam-blanch preferred.
Steam-blanch cubes: 100 seconds; slices: 3 minutes.
Water-blanch cubes: 60 seconds; slices: 2 minutes.
Chill: In running cold water for about 5 minutes.
Package: A, B, C, D, and E types recommended.
Freezing does something for parsnips, making them milder in flavor with the sweet flavor seeming more pronounced.

PEAS

Prepare: Shell out a quantity before starting to blanch; do not wash after peas are shelled. Discard those peas which are starchy.
Blanch: Water-blanch preferred.
Water-blanch small peas: 45 seconds; large peas: 60 seconds.
Steam-blanch small peas: 90 seconds; large peas: 2 minutes.

Chill: For about 3 minutes in running cold water.

Package: A, B, C, D, and E types recommended.

This is one of the standby vegetables. You probably will want to freeze a lot of peas. Try to catch the first harvests of the season for your freezing quota.

PEAS, BLACKEYED (FIELD)

Prepare: Shell a quantity before starting the blanching procedure; do not wash after peas are shelled; discard those peas which are hard.

Blanch: Water-blanch preferred.

Water-blanch: 2 minutes.

Steam-blanch: 3 minutes.

Chill: In cold running water for about 5 minutes.

Package: A, B, D, E, or G types recommended.

Blackeyed peas have a special meaning all their own to those who live where they are grown; being one of those vegetables in great demand, you will probably want to freeze a quantity of this vegetable, for it makes an excellent frozen product.

PEPPERS, SWEET

Prepare: Wash peppers, trimming out stem and seeds. They may be frozen in halves, or cut in $^1/_2$-inch strips or slices.

Blanch: Either boiling water or steam provides satisfactory blanching.

Water-blanch slices: 2 minutes; halves: 3 minutes.

Steam-blanch slices: 3 minutes; halves: 4 minutes.

Chill: In running cold water for several minutes until cool.

Package: B or G type recommended for halves; A, B, C, D, and E types for slices.

PIMIENTOS

Prepare: Select when dark red and slightly shriveled. Peel by roasting in 400° F. oven for 3 to 4 minutes. Remove skins under cool running water. Remove stem end, halve, slice or dice. Pack dry.

Package: A, B, C, D, and E types recommended.

POTATOES, IRISH

Prepare: For French Frying—Select mature potatoes which have been stored for 30 days. Wash, peel, cut into 1/3-inch sticks.

New Potatoes—Dig potatoes when they are about the size of walnuts; wash clean of soil, and scrub vigorously to remove tender skins (no paring will be necessary, although they may be scraped if desired).

Blanch: Either boiling water or steam is satisfactory for preparing the potato sticks; steam is preferred for preparing the small new potatoes.

Water-blanch sticks: 2 minutes.

Steam-blanch sticks: 3 minutes; walnut-size new potatoes: 5 minutes.

Chill: For 3 to 5 minutes in cold running water.

Package: B, C, D, E, or G type recommended.

French fries and new potatoes are grand items for the freezer. Potatoes ready for French frying seem made to order for hurry-up meal preparation.

POTATOES, SWEET

Prepare: Select fully mature, cured sweet potatoes, wash. Cook potatoes until soft; allow to stand at room temperature to cool. Then peel the potatoes and either mash or slice. Dip slices for 5 seconds in citric acid solution containing 1 tablespoon citric acid (or 1/2 cup lemon juice) to 1 quart water. If potatoes are to be mashed, dip the peeled potatoes in the citric acid solution for 5 seconds before mashing.

Package: B, C, D, E, or G type recommended for slices; B, C, D, and E types for mashed.

PUMPKIN

Prepare: Peel; cut in 1-inch cubes.

Blanch: Steam is preferred; and *steam* the pumpkin *until soft;* then mash.

Chill: Cool quickly by floating pan in running cold water.

Package: B, C, D, and E types recommended.

Freeze your own pumpkin for pies, or the pie mix all ready to pour into pie shells can be prepared by adding seasonings, etc. In

freezing the pie mix, remember to add slightly more seasonings than usual for they seem to lose some of their flavor during storage.

RHUBARB

Listed under and treated as a fruit, page 137.

RUTABAGAS

Prepare: Cut off tops; peel, dice in $^1/_2$-inch cubes.
Blanch: Steam-blanch preferred.
Steam-blanch: 70 seconds.
Water-blanch: 60 seconds.
Chill: In running cold water for about 3 minutes.
Package: A, B, C, D, and E types recommended.

SPINACH

Prepare: Wash thoroughly in running cold water to eliminate all particles of grit and soil. Cut off and discard thick main stems.
Blanch: Water-blanch preferred; agitate basket during blanching period.
Water-blanch: $2^1/_2$ minutes.
Steam-blanch: $3^1/_2$ minutes.
Chill: Thoroughly in running cold water for at least 3 minutes.
Package: A, B, C, D, and E types recommended.
This is one of the vegetables that freezes almost perfectly.

SQUASH, SUMMER

Prepare: Wash in running cold water; slice in $^1/_2$-inch slices.
Blanch: Water-blanch preferred.
Water-blanch: $3^1/_2$ minutes.
Steam-blanch: $4^1/_2$ minutes.
Chill: In running cold water for about 5 minutes.
Package: B, C, D, E, and G type recommended.

SQUASH, WINTER

Prepare: Peel the squash, then cut in 1-inch cubes.

Blanch: ***Cook until tender*** in either steam or boiling water, although steam is preferred. When cooked, mash.

Chill: Cool quickly by floating pan in running cold water.

Package: B, C, D, and E types recommended.

SWISS CHARD

Prepare: Wash thoroughly in running cold water to rid leaves of gritty soil and foreign particles; cut off and discard main stems.

Blanch: Water-blanch preferred; agitate basket during blanching period.

Water-blanch: 2 minutes.

Steam-blanch: 3 minutes.

Chill: In running cold water for about 5 minutes.

Package: A, B, C, D, and E types recommended.

This vegetable is finding increasing favor among those who like greens.

TOMATOES

Prepare: Select uniformly red, fully ripe fruit; wash.

Blanch: Either boiling water or steam is satisfactory.

Steam-blanch: 2 minutes.

Water-blanch: 2 minutes.

Chill: In running cold water for 5 minutes. Then peel, cut out and discard blossom ends and cores. Package in containers recommended for fruits.

Package: A, B, C, D, and E types recommended.

While tomatoes will produce a satisfactory frozen product, they are not better than the canned product; if freezer space is limited, it is recommended that tomatoes be canned and freezer used for those vegetables which are preserved better by freezing.

TURNIPS

Prepare: Cut off tops; wash in running cold water; peel, and dice in $^1/_2$-inch cubes.

Blanch: Steam-blanch preferred.

Steam-blanch: 70 seconds.

Water-blanch: 60 seconds.

Chill: Thoroughly in running cold water for 5 minutes.
Package: A, B, C, D, and E types recommended.
The flavor of turnips, parsnips, and rutabagas seems to improve with freezing; the flavor is milder.

TURNIP GREENS

Prepare: Wash thoroughly in running cold water, eliminating all coarse large leaves.
Blanch: Water-blanch is preferred; agitate basket during blanching period.
Water-blanch: 60 seconds.
Steam-blanch: 100 seconds.
Chill: In running cold water for 5 minutes.
Package: A, B, C, D, and E types recommended.

FRUITS

The equipment needed for freezing fruits is the ordinary kitchen wares plus an ample amount of ice, and of course, proper packaging materials:

1. Sharp knives for capping berries, pitting fruit, etc.
2. The necessary bowls or pans in which to wash and prepare them.
3. Ice for keeping fruit chilled while working with it, especially berries and cherries. When washing fruit add ice to the water, for warm, ripe fruit is likely to become mushy while it is being prepared for the freezing containers. Extremely cold water "firms" fruit; warm water causes it to become water-logged and to bleed.
4. Packaging materials. It is essential that packages containing fruits be water-tight, otherwise the liquid from the fruit may seep through the container causing a good deal of trouble in the freezer. For peaches, apricots, and other fruits which brown readily, packaging must be absolutely moisture-vaporproof as well as

water-tight. Recommended containers are shown ir the illustration facing page 136.

5. Electric hand iron, curling iron, or heat-sealing iron for heat-sealing containers where necessary. Many of the containers for packaging fruits need no heat-seal for they are made with snap-in and snap-on lids or metal lids which are easily put in place and provide an adequate seal.
6. China-marking pencil or soft crayon for labeling packages with contents, date packed, and name or locker number if packages are to be taken to a locker plant for freezing or storage.

How to Use Sugar or Prepared Syrup

Whether you use dry sugar in preparing fruits for freezing, or a prepared syrup, one of the objects for good fruit preservation is to cover the fruit with juice or syrup so as to keep it from being exposed to the air which would cause an undesirable darkening (oxidation). So it is important that when syrup is used, a sufficient quantity is poured over the fruit to cover it; and, when dry sugar is used that the sugar be stirred in with the fruit until it has almost dissolved and drawn sufficient juice from the fruit to cover it.

The sugar treatment simply consists of adding dry sugar in the correct proportions to the whole or sliced fruit, then stirring until most of the sugar has dissolved in the juice drawn from the fruit; then pour fruit into containers.

The syrup treatment consists of packing sliced or whole fruit in freezing containers and then covering it with simple sugar syrup made in advance and cooled before using. The syrup may be made either by dissolving sugar in boiling water, or mixing Sweetose White syrup with water in the proportions given in the tables on the next page.

Honey may also be used as sweetening when preparing fruits for freezing. It can replace part of the required amount of sugar or corn syrup. But be sure the honey is mild in flavor and light in color otherwise honey flavor will predominate over

When Using Sugar to Make Syrup

Concentration Desired	Cups of Sugar Needed per Pint of Hot Water
30%	1
40%	1⅔
50%	2⅓
60%	3½
65%	4⅓
70%	5⅓

When Using Sweetose to Make Syrup

Concentration Desired	Water Needed for Each 5 Pound Jar Corn Syrup
50%	2 Pints, 1 Cup
60%	1 Pint
65%	1 Cup
70%	⅓ Cup

the fruit flavor. However, honey complements the flavor of some fruits such as cantaloupe. When honey is used to replace a portion of the sugar, use one cup of honey to one cup of either sugar or corn syrup.

When to Use Sugar or Syrup

A general rule to follow in the sugar vs. syrup treatment of fruits is to use syrup on those fruits which have comparatively little juice—sugar on those fruits which have plenty of juice which can be drawn from the fruit to form a natural sugar syrup. When using dry sugar, always slice or slightly crush the fruit so the juice can be readily withdrawn. Whenever whole fruit is to be frozen, it is best to use the prepared syrup.

Of course there are exceptions to this rule and the two best examples are sliced apples and whole cranberries. Cranberries

require no sugar or syrup and may simply be washed and packaged dry. Apples are pared, sliced, and then given either a water- or steam-blanching treatment (like vegetables), or treated with a sulfite solution and packaged dry.

Blueberries may also be frozen without sugar or syrup but the frozen product is better if the blueberries are slightly crushed and mixed with a small amount of sugar.

If you should happen to run short of sugar when freezing fruits and are unable to get enough for immediate use, and fruits must be frozen to save them, you can cut down on the amount of sugar used with such fruits as raspberries, loganberries, Boysenberries, Youngberries, dewberries, gooseberries, or currants. The amount can safely be cut to about one-half, using 8 parts of these fruits to 1 part of sugar (they are usually frozen with 4 or 5 parts of fruit to 1 part of sugar). When scant amounts of sugar are used for freezing fruits, you will find the frozen product more suitable for making pies, jams, or jellies than for dessert purposes.

While there are some fruits which are never recommended for freezing with dry sugar (such as peaches, plums, and apricots which have very little juice), there are a number of fruits which may be frozen with either sugar or syrup. Raspberries and strawberries are two notable examples; blueberries, blackberries, loganberries, dewberries, Youngberries, and Boysenberries are others. The whole berry is frozen with the syrup; the slightly crushed berry with the sugar.

The liquid on fruits will expand during freezing, so be sure to allow for this increase in bulk when packaging fruits, giving each package from three-fourths to one-inch headroom. Less headroom will be needed for pint packages than for quart packages. If headroom is not allowed on liquid or semi-liquid products for freezing, the covers will be pushed up, breaking the seal, or the packages will burst, causing a good deal of trouble in the freezer.

APPROXIMATE YIELD OF FROZEN FRUITS FROM FRESH*

Fruit	Fresh, as picked or purchased	Frozen
Apples	1¼ to 1½ lb.	1 pt.
	1 bu. (48 lb.)	32 to 40 pt.
Apricots	⅝ to ⅘ lb.	1 pt.
	1 bu. (48 lb.)	60 to 72 pt.
Berries[1]	1⅛ to 1½ pt.	1 pt.
	1 crate (24 qt.)	32 to 36 pt.
Cherries, sweet or sour	1¼ to 1½ lb.	1 pt.
	1 bu. (56 lb.)	36 to 44 pt.
Cranberries	½ lb.	1 pt.
	1 peck (8 lb.)	16 pt.
Currants	¾ lb.	1 pt.
	2 qt. (3 lb.)	4 pt.
Peaches	1 to 1½ lb.	1 pt.
	1 bu. (48 lb.)	32 to 48 pt.
Plums and fresh prunes	1 to 1½ lb.	1 pt.
	1 bu. (56 lb.)	38 to 56 pt.
Raspberries	1 pt.	1 pt.
	1 crate (24 pt.)	24 pt.
Rhubarb	⅝ to 1 lb.	1 pt.
Strawberries	⅝ qt.	1 pt.
	1 crate (24 qt.)	38 pt.

[1] Includes blackberries, blueberries, Boysenberries, dewberries, elderberries, gooseberries, huckleberries, loganberries, and Youngberries.
* Courtesy of U. S. D. A., from Home and Garden Bulletin No. 10.

To Prevent Fruit Browning

When peaches, apples, plums, apricots, pears, and cherries are cut and exposed to the air, the cut surfaces will become very discolored if allowed to stand for any length of time. In some cases, it may even take place slowly during frozen storage; and if the thawed fruit is not served immediately, it will discolor very rapidly. Since discoloration not only affects the attractive appearance of fruit, but changes the flavor as well, you may find it advisable to treat the above-named fruits with ascorbic acid. Ascorbic acid is another name for vitamin C; it can be purchased at some—not all—drug stores in powdered form. Besides being rather hard to get, it is also rather expensive, but

it certainly will prevent discoloration of any cut fruit you freeze—the only sure way that has been found up to now of doing this. The ascorbic acid is added to the syrup before it is poured over the fruit in the freezing containers. Use 1 teaspoon of ascorbic acid powder to 4 cups of prepared syrup, this amount being sufficient to treat about 12 pint packages of fruit.

APPLES

Procedure 1: Blanching Treatment—Select firm winter apples. Peel, core, then slice in twelfths. Work with a small amount at a time to prevent the apples being exposed to the air for too long a time. After slicing, hold them in a weak salt brine (2 tablespoons in 1 gallon of water) until they are ready to be blanched. Steam-blanch (recommended) for 90 seconds; water-blanch for 60 seconds and then cool in running cold water (or water containing ice). Package dry without sugar or syrup.

Procedure 2: Sulfite Treatment—Select firm winter apples. Peel, core, then slice in twelfths, dropping slices into a weak brine (2 tablespoons salt in 1 gallon of water). After 15 or 20 apples have been sliced, remove slices from salt brine and place them in a freshly prepared sulfite solution for 5 minutes. The sulfite solution is prepared by dissolving 2 teaspoons of *sodium sulfite* or *sodium bisulfite* (either the U. S. P. or C. P. grade will do) in 1 gallon of water. An earthenware, stainless steel, glass or enameled container must be used for the sulfite solution. The same solution may be used to treat 4 or 5 lots of apples. The slices tend to float in the sulfite solution, so place a pyrex or china plate on top of the slices to keep them immersed. After 5 minutes in the sulfite solution, remove the slices to an earthenware, china, or glass bowl and hold them in the refrigerator for 4 or 5 hours before packaging. Package dry using no sugar or syrup.

Procedure 3: Apple Sauce—Prepare apple sauce in the usual manner, sweetening to taste (about $^1/_2$ to $^3/_4$ cup sugar per 5 cups apple sauce). If spiced apple sauce is made with lemon juice or peel, cinnamon, nutmeg, or cloves, add slightly more of the spices than usual as spices seem to lose some of their potency during frozen storage. Cool the cooked apple sauce before packaging.

Package: A, B, C, and D types recommended for slices: A, B, C, D, E, F, and G types for sauce.

If fresh apple pie is a favorite at your house, you will probably want to include apples on your list of fruits for freezing on two counts: frozen apples make every bit as delicious pie as the fresh ones; and you can't get good apples for pie making all year round.

APRICOTS

Procedure: Halves or Whole—Apricots may be frozen with or without skins; to peel, immerse fruit in boiling water for 15 to 30 seconds, then in running cold water for a minute or two, and rub off peels. If they are frozen with skins, wash in cold running water, then halve and pit, or leave whole for freezing. Pack into container; cover with 60 or 70% syrup, allowing $^3/_4$-inch headroom.

Package: A, C, D, E, F, and G types recommended.

Apricots bolster the flavor of peaches and can be combined with them either before freezing, or mixed together afterwards when being used.

AVOCADOS

Procedure: Select soft, ripe fruit, with rinds free from dark blemishes. Peel the fruit, cut in half, remove pit. Mash pulp. Pack in one of the following ways:

Unsweetened pack for salads and sandwiches—add $^1/_8$ teaspoon of ascorbic acid to 1 quart of purée.

Sugar pack for ice cream and desserts—blend 1 cup of sugar with 1 quart of purée. Pack into containers, leaving head space. Seal tightly.

Package: C, D, E, F, and G recommended.

For a special dessert cut 2 avocados in half; remove pit; scrape out pulp from rind, keeping rind intact; mash pulp and mix well with 4 teaspoons lemon juice and 3 tablespoons sugar; put pulp back into rind halves; freeze. When frozen, wrap halves in moisture-proof paper, pack in deep folding waxed carton, then overwrap carton with moisture-proof paper and heat-seal. To serve, allow to stand in the package until thawed; serve while still chilled.

BLACKBERRIES

Procedure: Select fully ripe berries; wash thoroughly in cold running water or, preferably, in water containing ice. Clean, eliminate red and green berries. Fill container to within $^3/_4$ inch of top to allow for expansion during freezing; cover with 50 or 60% syrup.

Package: A, C, D, E, F, and G types recommended.

Not a particularly good product to serve as a dessert sauce, but makes delicious pies, excellent jellies, good wine.

BLUEBERRIES

Procedure 1: Wash fully ripe berries in cold running water or, preferably, in water containing ice. Then pick out stems, pieces of leaves and green berries. Mix with dry sugar in the proportion of 5 or 6 pounds fruit to 1 pound sugar. Stir gently until juice is drawn from berries and sugar is partly dissolved in juice. Fill container with berries, allowing $^3/_4$ inch headroom.

Procedure 2: Wash in cold running water or, preferably, in water containing ice; pick out stems and leaves; eliminate bruised berries. Fill container or carton *full*; use no sugar or syrup. Since berries are packed dry, no headroom need be allowed.

Package: A, C, D, E, F, and G types recommended; the B type may also be used for the dry pack.

BOYSENBERRIES

Treated same as Blackberries.

Serve this fruit as a dessert sauce, or freeze the pulpy juice or purée (see pp. 142–143) for use in making Velva Fruit (p. 205) or as a topping for ice cream sundaes.

CANTALOUPE

See Muskmelon. Page 134.

CHERRIES, SOUR and SUB-ACID

Procedure: Select fully ripe cherries; wash in water containing ice; stem and pit. Add 1 pound sugar to each 4 or 5 pounds cherries; stir gently until sugar is partly dissolved in juice drawn from

cherries. Fill containers to within $^3/_4$ inch of top to allow for expansion during freezing.

Package: A, C, D, E, F, and G types recommended.

English Morello and Montmorency cherries make very delicious red pies; but you will enjoy serving and eating cherries in many other ways, too.

CHERRIES, SWEET

Procedure: Use fully ripe fruit; wash in water containing ice; stem. Pack in container for freezing, allowing $^3/_4$-inch headroom for expansion; cover with 40 or 50% syrup.

Package: A, C, D, E, F, and G types recommended.

While the frozen sweet cherries do not compare with the frozen sour cherries, they do make a satisfactory fruit to serve as a dessert.

COCONUT

Procedure: Grate fully ripe coconut which is moist (still retains coconut water). Pack tightly as dry product, or add $^1/_4$ pound of sugar to 2 pounds of grated coconut.

Package: A, C, D, E, F, G, and H recommended.

CRANBERRIES

Procedure 1: Wash in cold running water; pick out stems, pieces of leaves, and poor berries. Pack dry, without sugar or syrup, in any container or carton recommended for fruits or vegetables.

Procedure 2: Wash berries in cold running water; pick out stems, pieces of leaves, and poor berries. Cook berries as you would for cranberry sauce, or purée (strain), adding sugar to taste. Fill container allowing $^3/_4$ inch headroom.

Package: A, B, C, D, E, F, and G types may be used for the dry pack; A, C, D, and E types recommended for sauce.

Cranberry orange relish may also be frozen as well as the fresh cranberries or the prepared sauce. To make cranberry orange relish use oranges in the proportion of 1 large orange to 2 cups cranberries; put cranberries, the orange rind and also the pulp through the food chopper, grinding medium-fine; add $^3/_4$ cup sugar to each 2 cups pulp and mix thoroughly; pack in freezing containers, allowing headroom for expansion during freezing.

CURRANTS

Procedure: Select soft-ripe fruit; wash in cold running water or, preferably, in water containing ice; stem. Add 1 pound sugar for each 3 pounds fruit; stir gently until enough juice is drawn from fruit to partly dissolve sugar. Fill container to within $^3/_4$ inch from top for headroom.

Package: A, C, D, E, F, and G types recommended.

DATES

Procedure: Select dates with tender texture and free of blemishes. Wash, then slit and remove pits. Leave whole, or press through sieve for purée. Pack into containers, leaving head space.

Package: B, C, D, E, F, and G types recommended.

DEWBERRIES

Treated same as Blackberries.

If you don't like the seeds in these berries, freeze these fruits as a pulpy juice or purée containing all of the berry except the seeds.

FIGS

Procedure: Wash in water containing ice; eliminate undermature fruit. Pack in container, allowing $^3/_4$ inch headroom; cover with 50 or 60% syrup.

Package: A, C, D, and E types recommended.

If you live in a section where figs are grown, or quantities are available at reasonable prices in season, you will want to freeze some for year-round eating pleasure.

GOOSEBERRIES

Procedure: Pick off stems and blossom ends; wash in cold running water. Crush slightly; add 1 pound sugar for each 3 pounds berries; gently stir until juice is drawn from the berries to dissolve sugar partly. Fill container to within $^3/_4$ inch from top.

Package: A, C, D, E, F, and G types recommended.

The lowly gooseberry is generally thought of as being too sour. This discreditable reputation is due mostly to the fact that for most

preserving purposes the gooseberry is picked and used when it is still green. Dead ripe gooseberries, tinged with red and purple, are sweet—altogether different than the sour green ones. Let your gooseberries ripen on the bush, before you harvest for freezing.

GRAPEFRUIT

Procedure: Select soft-ripe fruit. To loosen peels, immerse for 3 minutes in boiling water, then cool in cold running water; peel, remove all white membrane; break into sections; remove section membrane and seeds. Pack in container, allowing $^3/_4$-inch headroom; cover with 60 or 70% syrup.

Package: A, B, C, D, E, F, and G types recommended.

Comment: Under certain conditions grapefruit may change flavor during storage so it is wise to hold it only for a relatively short storage period.

It is difficult to get good breakfast grapefruit the year round and if you like grapefruit sections swimming in juice, be sure to freeze some of this product when the best grapefruit are on the market, or when they are fully tree-ripened if you live in a citrus fruit belt.

HUCKLEBERRIES

Treated same as Blueberries.

LOGANBERRIES

Treated same as Blackberries.

MIXED FRUITS

Procedure: Select soft-ripe fruit. Peel, core, pit, slice, or cube as given in directions for each individual fruit. Pack in container allowing $^3/_4$ inch headroom; cover with 60 or 70% syrup.

Suggested Combinations: $1^1/_2$ cups pineapple; 1 cup apples; $1^1/_2$ cups cantaloupe; $^3/_4$ cup Boysenberries or Youngberries; and $^1/_4$ cup Maraschino cherries.

$1^1/_2$ cups apricots; $1^1/_2$ cups Boysenberries or Youngberries; 1 cup red raspberries; 1 cup pineapple.

Equal portions of sliced peaches and red raspberries; or equal portions of sliced peaches and sliced strawberries.

Equal portions of pineapple, rhubarb, and strawberries.

Equal portions of apricots, pineapple, and cherries.

NOTE: Since berries and rhubarb are in season earlier than such fruits as peaches and apricots, the frozen product will have to be used for those fruits out of season to make some of the suggested mixed fruit combinations. Simply thaw the fruit enough so that the individual pieces can be broken apart, and use it to mix with the fresh fruit in such cases. If you wish to experiment with your own mixtures, give thought to color combinations as well as flavor. Sometimes two fruits combine as nicely as three or four.

Package: A, C, D, E, F, and G types recommended.

MUSKMELON

Procedure: Select fully ripe, vine-ripened cantaloupe. Cut in half; scrape out seeds; cut into slices, peel off rind and hard flesh; cut soft flesh into $^1/_2$- to $^3/_4$-inch cubes. Mix with sugar, using 1 pound of sugar for each 5 pounds cantaloupe; stir until sugar is partially dissolved. Pack in containers, allowing headroom for expansion.

Package: A, C, D, E, F, and G types recommended.

A few packages of frozen cantaloupe are very nice in the freezer.

NECTARBERRIES

Treated same as Blackberries.

This is a new member of the blackberry family and very tasty. Can be used in any of the ways blackberries, dewberries, loganberries, Boysenberries, or Youngberries are used.

NECTARINES

Treated same as Peaches.

The pulpy juice of nectarines makes a wonderful sundae sauce, so you may wish to freeze some of this product (see p. 142).

NUTS

Procedure: Shell and remove all extraneous material. Separate

whole nuts and broken pieces for packaging. Fill containers and seal tightly.

Package: A, C, D, E, F, G, and H types recommended.

OLIVES

Procedure: Pick olives ripe; pickle in the usual manner. After product has been pickled, pack olives in container, allowing $^3/_4$ inch headroom; cover with the liquid brine. They may also be frozen dry, without brine; in this case fill the container full.

Package: A, C, D, E, F, and G types recommended.

The flavor of olives frozen promptly after pickling is especially fine. However, when this product is thawed, it should be used within a very few days, as it is perishable at room temperature; be sure to keep this product under refrigeration after it is thawed until it is used.

ORANGES

Procedure: Select soft-ripe fruit. To loosen peels, immerse in boiling water for 2 minutes, then cool in cold running water. Peel; break into sections, removing membranes and seeds; pack in container, allowing $^3/_4$ inch headroom; cover with 60 or 70% syrup.

Package: A, C, D, E, F, and G types recommended.

Oranges, grapefruit, and pineapple make a nice tropical fruit cocktail which you can serve when you have these frozen fruits on hand.

PASSION FRUIT

This makes one of the most delicious fruit purées of any of the long list of fruits. The purée can be used to make either passion fruit ice cream, or Velva Fruit (see pp. 205–206).

PEACHES

Procedure: Select soft-ripe fruit. To remove skins, immerse peaches in boiling water for about a minute, then in cold running water and skins will rub off. Cut out bruised or imperfect portions. Peaches may be frozen in halves, or sliced. For halves, remove pit and pack in container, allowing headroom; for slices, slice sections

from around pit directly into container, allowing headroom for expansion. Cover peaches with 60 or 70% syrup.

Package: C type recommended for halves; A, C, D, E, F, and G types for slices.

PEARS

Procedure: Select soft-ripe fruit; wash in cold running water. Peel, cutting out bruised or imperfect portions; core and quarter; slice or dice, if desired. Pack in container allowing $^3/_4$ inch headroom; cover with 60 or 70% syrup.

Package: A, C, D, E, F, and G types recommended.

Pears do not make a particularly desirable frozen product, but directions are here given for those who wish to freeze them.

PERSIMMONS

Like passion fruit, persimmons are very good made into a purée and frozen for use in making ice cream, or as a topping for plain vanilla ice cream.

PINEAPPLES

Procedure: Select soft-ripe fruit. Peel; remove core; then slice, dice, cut in wedges or sticks. Pack in container allowing $^3/_4$ inch headroom; cover with 60 or 70% syrup.

Package: A, C, D, E, F, and G types recommended for dice or wedges; C type for slices; D type for sticks.

Comment: Under certain conditions pineapple may change flavor during storage so it is wise to hold it only for a relatively short storage period.

PLUMS AND FRESH PRUNES

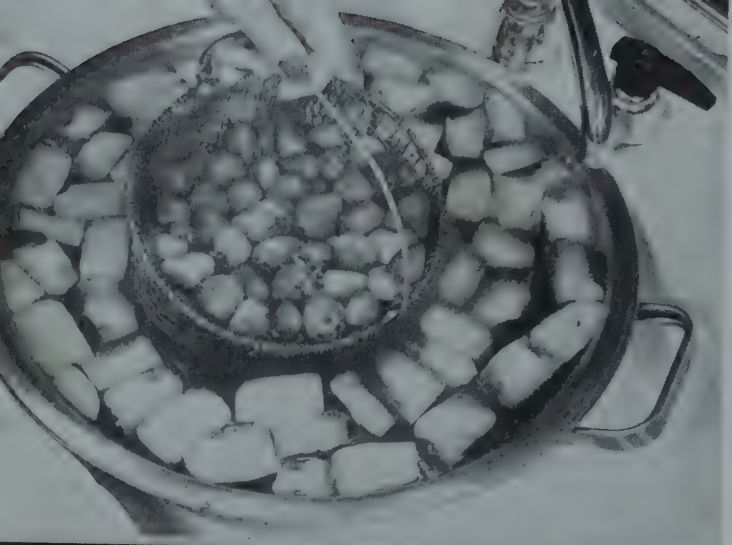
Procedure: Select soft-ripe fruit; wash in cold running water; pit and quarter, or cut in halves. Pack in container allowing $^3/_4$ inch headroom; cover with 60 or 70% syrup.

Package: A, C, D, E, F, and G types recommended.

POMEGRANATE

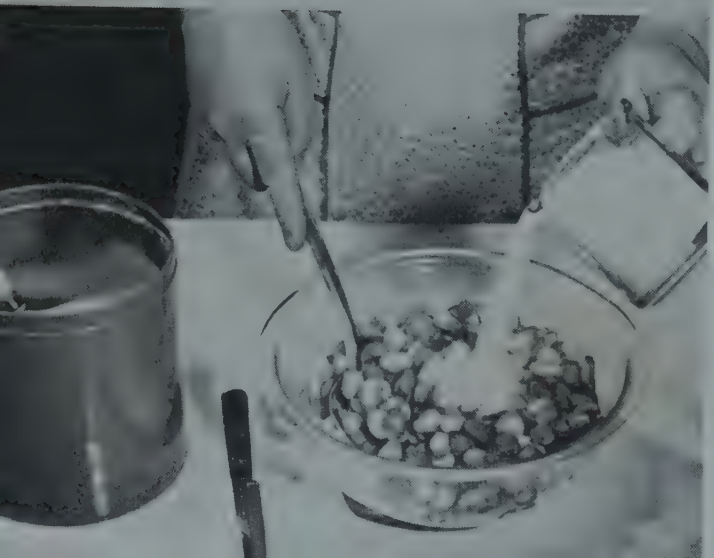
Procedure: Select fully ripe fruit; peel and remove seeds. Pack

Types of packaging for freezing fruits: A. Waxed end-opening folding carton, with heat-sealing bag-liner; B. Waxed top-opening folding carton with moistureproof Cellophane liner; C. Heavily waxed Lily Tulip frozen food container; D. Heekin's Frosty Can with snap-on cover; E. Heavily waxed Vapocan with plastic slip-on lid; F. Crown Freez-tainer which is a plastic container with a plastic slip-on lid; G. Ball glass jar with metal screw-on lid; H. Sealright Thermorex container.



For delicate fruit such as strawberries or raspberries, use plenty of ice in the water to keep the fruit firm.

Slice or slightly crush berries before adding sugar. Avoid over-crushing to prevent a mushy finished product.

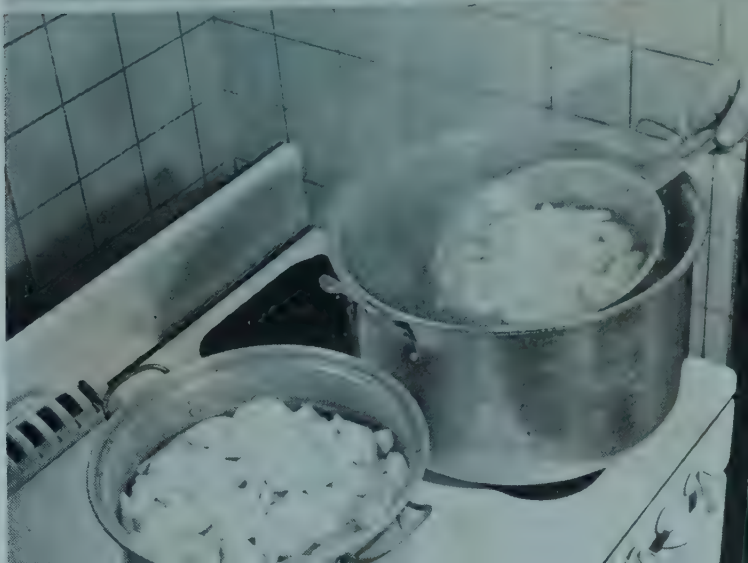


Add sugar in the correct proportion to fruit. Gently blend in sugar until juice begins to form. Work with small quantities at a time to avoid over-crushing fruit.

To remove peach skins, immerse fruit in boiling water for about a minute, then in cold running water as shown here. The skins will rub off easily.

For halves, remove pits and pack into containers, allowing head space. Cover peaches with 60 or 70 per cent syrup.

Apples are prepared by blanching them, as one does a vegetable. Work with small quantities of this fruit to prevent discoloration (oxidation). Hold peeled apples in a weak salt brine solution prior to blanching.



At left is a hand operated hydraulic press (see construction diagram on page 139), and below is pictured the "nutcracker" type of hand press which may be used to extract juices from vegetables and fruit. After juice is extracted, it may be packaged and frozen. *Photos courtesy New York State Agricultural Experiment Station.*

Shown above is a hand operated Foley Food Mill. Pictured at right is a mechanical extractor (made by Victorio Producto Company), capacity about 3 gallons per hour. Such puréeing equipment easily removes skins and seeds, leaving only pulpy juice.

in container, allowing $^3/_4$ inch headroom; cover with 40 or 50% syrup.

Package: A, C, D, E, F, and G types recommended.

This fruit is not interesting to serve by itself, but certainly does add attraction to any assortment of mixed fruits you may care to serve.

RASPBERRIES, BLACK, PURPLE, RED

Procedure 1: Select soft-ripe fruit. Clean berries by washing them in water containing ice; eliminate berries which are immature, moldy, etc. Add 1 pound sugar to each 4 or 5 pounds of berries; stir gently until sugar is partly dissolved in juice drawn from berries. Fill container, allowing $^3/_4$ inch headroom.

Procedure 2: Clean berries as described above, eliminating immature berries and those which are soft and mushy. Pack whole berries in container, allowing $^3/_4$ inch for headroom; cover with 50 or 65% syrup.

Package: A, C, D, E, F, and G types recommended.

RHUBARB

Prepare: Cut off top leaves; wash thoroughly in running cold water; cut into 1-inch lengths.

Blanch: Water-blanch preferred.

Water-blanch: 90 seconds.

Steam-blanch: 2 minutes.

Chill: In running cold water for several minutes.

Package: A, B, C, D, E, F, and G types recommended.

STRAWBERRIES

Procedure 1: Select soft-ripe fruit; wash berries in water containing ice. Hull; slice in $^3/_8$-inch slices; add 1 pound sugar for each 4 or 5 pounds berries; stir gently until sugar is partly dissolved in juice drawn from berries. Pour into container, allowing $^3/_4$ inch headroom.

Procedure 2: Select soft-ripe fruit; wash berries in water containing ice. Hull, eliminating those berries which are either green or decayed. Pack into container, allowing $^3/_4$ inch headroom; cover with 50 or 65% syrup.

Package: A, C, D, E, F, and G types recommended.

Comment: Preferably, strawberries should be frozen sliced with sugar, since this method retains flavor better.

YOUNGBERRIES

Treated same as Blackberries.

Of the blackberry family, Youngberries are more flavorful than many. They make very good ice cream or Velva Fruit (see p. 205), they can be served as a fruit sauce, in pies, upside-down cake, tarts; etc.

WATERMELON

Does not produce a satisfactory frozen product except as a purée (see p. 141). As such it gives a real exotic touch to ice cream, puddings, etc.

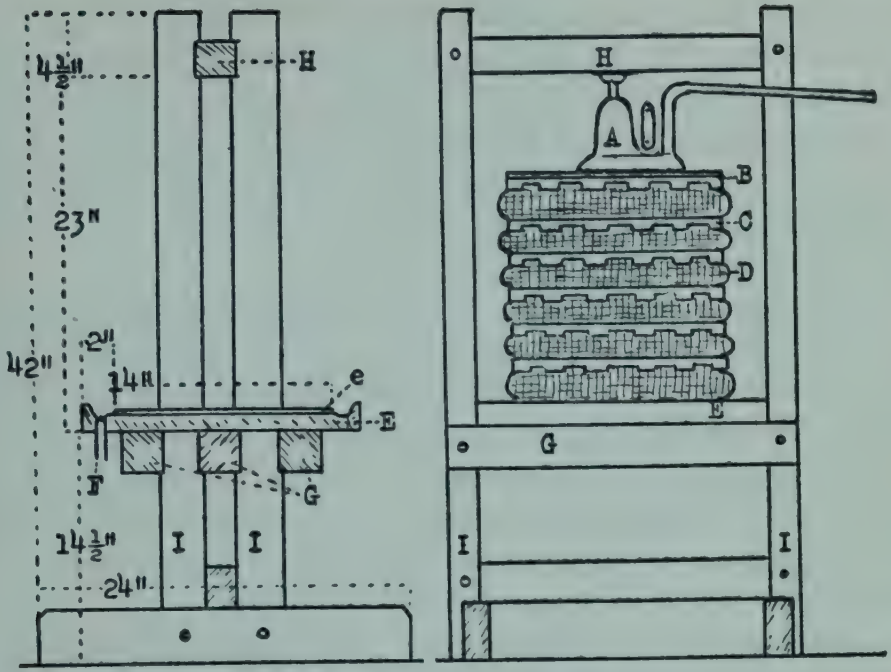
FRUIT AND VEGETABLE JUICES AND PURÉES

Freezing is by all means the best and simplest method of preserving fruit juices. As a rule, home-made frozen fruit juices are far superior to commercial canned fruit juices. They have a fresh quality which cannot be duplicated in juices that have been sterilized with heat.

Frozen fruit juices have many uses. You can serve them as the first course of a meal, in mixed fruit drinks and punches. They also are needed for the making of ices, sherbets, fruit ice creams, jellies, and for flavoring many other products.

Equipment Needed

There is considerable work involved in making juices; however, the freezing procedure is simplicity itself. Apples and pears may be taken to a cider mill for juicing if one is in the vicinity. But other juices must be prepared at home; this means that you will need some special equipment if they are to be prepared without great effort.



Side Cross Sectional View Front View

Construction and Dimensions of Home-made Fruit Juice Press with Approximate Capacity of 1 Bushel of Fruit. *Courtesy of N. Y. S. Agr. Expt. Station.*

A, hydraulic jack, capacity 1½ tons, 5-inch lift. A 4 × 4 inch block 5 inches high should be used in conjunction with the jack to increase the total lift.

B, flat support for jack, ¾ inch oak, 14 × 14 inches. Six 1 × ¼ inch slats are nailed across grain on the lower side.

C, six racks, oak 14 × 14 inches, made from ¼ × 1½ inch and ¼ × 1 inch slats. The wider slats are used at the edges. The center slat may be made 20 inches long so that it may serve as a guide between the uprights I. Corrosion-resistant nails should be used. The racks may be paraffined by warming and brushing on hot paraffin.

D, press cloths 24 × 24 inches. Heavy twisted cotton of open weave. White grain sacking or white duck cloth may be used. These may be lined with muslin cloth for certain fruits, e.g., berries.

E, press base. Careful and sturdy construction is most essential to a good press. Hard close grained wood such as maple is desirable. A ¾—17 inch × 17 inch base has a ½ × 2 inch inside bevelled edge around it. This is securely attached to base support G. A ¼—14 inch × 14 inch board (e) is placed over the main base and a ½ inch groove is cut around it so that the juice may flow to the outlet F. A smooth surface and a coat of paraffin are desirable.

F, outlet for juice, ¾ inch pipe of corrosion-resistant metal.

G, support for press base.

H, press top, a metal plate at point of contact of press is desirable.

I, uprights. Two uprights used on each side to allow more sturdy press base support G and guide for racks C.

J, cheese form 14 × 14 inches square, 2 inches high, made with 1 inch board.

If only a little juice is to be made, and if the fruit is soft, it may be pressed in a clean muslin bag, such as are commonly used for making jelly. The flow of juice may be hastened and a greater yield obtained by using a simple hand press of the nut cracker type, which can be made at home from two wooden paddles and a small piece of light rope or heavy twine (see illustration facing page 137).

A barrel press may be used to obtain juice from apples, pears, plums, grapes, currants, berries, etc. This is an old fashioned type of press having a cylindrical compartment built in a heavy framework to which a screw rachet is fixed. The crushed fruit is put into a bag made of coarse cloth which is then placed in the "barrel." The screw is turned down thus pressing the fruit by forcing the juice through the cloth, then through the cracks between the staves or perforations in the barrel.

A better press, which, however, is not commercially available, can be made from materials usually available on a farm. This press (shown opposite page 137) is designed after the large hydraulic presses used in cider mills, but uses an ordinary hydraulic automobile jack to exert the necessary pressure.

Some electric kitchen mixers have attachments for reaming citrus fruit and for making pulpy juices and purées from soft fruits.

One of the most useful devices for making pulpy juices, such as tomato juice, and purées is a tapered screw extractor (see illustration facing page 137) which forces the juice through a corrosion-resistant metal screen. A large amount of pulpy juice can be made in a few minutes with this extractor which is manufactured by the Victorio Producto Co.

Tomatoes, berries, and other soft fruits can be converted into pulpy juice simply by rubbing through a colander or strainer which has fine holes. A conical corrosion-resistant metal screen, resting on a heavy-gauge wire stand, fitted with a wooden roller for forcing the juice through the screen, can be purchased at

large hardware stores. This apparatus is useful, if you are not making large quantities of juice. The Foley Food Mill (available in several sizes) is still better for making limited quantities of tomato and pulpy fruit juices (see illustration facing page 137).

In juicing fruits or vegetables, use aluminum, stainless steel, glass, or glazed earthenware containers for the juice. Do not allow the fruit juices to stand around for any length of time since contact with the air causes them to lose flavor and vitamin C and develop off-flavors.

It is advisable to cut up, grind or crush the fruit or vegetable before the juice is extracted since a much larger yield of juice is obtained. Apples and pears must be ground, but need not be heated before grinding. Citrus fruits are halved, then reamed. Most other fruits should either be cut up or crushed, then heated just enough to soften them and allow free flow of juice during pressing.

Fruit juices and purées having good color and superior flavor may be made from frozen fruits, either the commercially frozen products or those which you have frozen. In making juices and purées from frozen fruits it is only necessary to allow them to thaw until the ice is gone, but the product should be still cold, and then press out or extract the juice. Since freezing and thawing softens the fruit and allows much of the color to pass into the juice, there is no need to heat the fruit either before or after freezing.

Hot juice or purée, e.g., grape juice and berry purée, should be cooled quickly. This may be done by partially filling an aluminum pan with the hot juice, and floating the pan in a larger container of running cold water. When the juice or purée has been cooled to room temperature, it is ready for packaging and freezing. Any of the deeper containers suggested for use in packaging fruit are suitable (see illustration facing page 136).

Step by Step Procedures

APPLES, PEARS

Select sound, firm, ripe fruit of suitable varieties.

Apples: Any late autumn or winter variety will do but Northern Spy, Russet, Baldwin, Greening, McIntosh and blends thereof are among the best.

Pears: Any late autumn or winter variety will do but Bartlett, Beurre, D'Anjou, Vermont Beauty, and Seckel probably are best.

Either take to "custom" cider mill for washing, grinding and pressing in hydraulic press, or do this work yourself.

Strain juice through muslin bag.

Fill into containers.

Freeze.

APRICOTS, PEACHES, NECTARINES

Clear apricot, peach, and nectarine juices are not very desirable because of lack of flavor and "body." The pulpy juices (available commercially as "nectars") are delicious and can be easily made from the frozen fruit if you have equipment for "puréeing" fruit.

Select soft, ripe fruit of proper varieties for freezing (see pages 92, 95, and 94 respectively).

Prepare and freeze according to procedures on pages 129, 135 and 134 respectively.

Thaw until ice disappears.

While still cold put through tomato juicer, Foley Food Mill, or rub through corrosion-resistant screen.

Fill into containers.

Freeze.

NOTE: This product is a purée and is too thick for use as a beverage without dilution with approximately an equal quantity of a syrup made by dissolving 1 cup of sugar in 5 cups of water. This can be done at time of use.

CHERRIES, CURRANTS, BERRIES

Method A—Hot Pressing:

Select fully colored, soft ripe fruit.

Stem, and/or, eliminate foreign matter.

Wash in cold water.
Crush.
Add enough water to keep from sticking.
Heat until boiling begins.
Press through barrel, bag, or hydraulic press.
Strain juice through muslin.
Cool juice.
Fill into containers.
Freeze.

Method B—Cold Pressing Thawed Fruit:

Thaw frozen fruit until ice is gone.
Press through barrel, bag, or hydraulic press.
Strain juice through muslin.
Fill into containers.
Freeze.

CITRUS JUICES

Select fully ripe fruit of proper variety.

Oranges: Valencia variety best. Others satisfactory, except California Navel.

Tangerines: Choose a variety of good flavor.

Grapefruit: All varieties satisfactory.

Lemons: All varieties satisfactory.

Cool fruit.
Ream lightly.
Strain juice through double thickness of cheesecloth.
Fill into containers.
Freeze.

GRAPES

Select fully ripe grapes of proper variety. Concord and Fredonia varieties best.

Wash.
Stem.
Crush.
Add minimum water to keep from sticking.
Heat to 150° F.
Press while still hot in barrel, bag, or hydraulic press.

Cool.
Fill into containers.
Freeze.
Store, 2 weeks or longer.
Thaw in refrigerator.*
Decant juice taking care not to disturb sediment.
Wash out containers.
Return juice to containers.
Refreeze.

PLUMS AND FRESH PRUNES

Select soft ripe fruit, preferably of dark-colored variety.
Wash.
Cut in halves, pit.
Pack into cartons.
Cover with heavy sugar syrup.
Freeze.
Thaw until ice is gone.

1. To make *juice:*

Press in barrel, bag, or hydraulic press.
Strain through muslin.
Fill into containers.
Freeze.

2. To make *purée:*

Put thawed fruit through tomato juicer, Foley Food Mill, or corrosion-resistant screen.
Fill into containers.
Freeze.

NOTE: The product is a purée and should be diluted with an equal volume of sugar syrup (1 cup sugar in 5 cups water) before use.

TOMATO JUICE

Select soft ripe fruit.
Wash.
Cut out cores and discolored ends.

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* This thawing is necessary to eliminate "argols" (cream of tartar crystals) which form during the first freezing.

Quarter.
Add enough water to keep from sticking.
Heat to boiling.
While still hot, put through tomato juicer, Foley Food Mill, or corrosion-resistant screen.
Add 1 teaspoon salt per quart of juice; stir until dissolved.
Fill into containers.
Freeze.

VEGETABLE PURÉES

To freeze vegetable purée, merely cook the vegetable in boiling water or steam until it is done; then mash it with a potato masher, mashing it smooth without whipping air into it. A kitchen utensil made especially for puréeing foods, such as the Foley Food Mill, makes this an easier task and produces a fine purée. Pack the purée into any container such as is used for fruits, heat-seal if necessary, label and freeze.

Purées make excellent cream soups, or they can supply baby with his quota of vegetables until he is able to partake of more solid foods, or they will aid materially in the diet of the sick.

To serve them as a vegetable, merely thaw the purée in the package, then season and heat to serving temperature. To serve as a cream soup, add 2 cups of milk or water to a pint package of purée, season to taste, and heat to serving temperature, stirring occasionally.

Those vegetables which make the best puréed products for freezing are the following: asparagus, peas, spinach, carrots, beets, parsnips, rutabagas, turnips, sweet potatoes, pumpkin, winter squash.

BEEF, PORK, VEAL, LAMB, AND MUTTON

The factors governing successful freezing of meat may be listed as follows:

1. Careful selection of meat animals.

2. Proper butchering.
3. Aging of those meats where recommended.
4. Cutting into table cuts, or preparing for table use.
5. Proper packaging.
6. Freeze immediately.
7. Maintain storage at 0° F., or below.

About Meat Selection

Bearing in mind the fact that freezing does not greatly improve the texture or quality of a product, but merely retains the original goodness, it is best to select for freezing only those live animals and poultry which are young and tender. Beef which is old and tough to begin with will still be tough when frozen and cooked, although freezing does tenderize meat to some extent.

Those persons raising poultry and meat animals will have no difficulty determining the age at which meat is ready for slaughter, but there are many persons who wish to freeze meat who should seek the advice of an expert for help in the selection of beef and poultry which will be best for freezing.

About Slaughtering

The equipment needed for slaughtering and cutting up meat carcasses for freezing is not likely to be found in any but farm homes where animals have been slaughtered in the past; and it is not recommended that the average person who wishes to freeze meats purchase such equipment, for unskilled butchering can waste and spoil meat. Besides, this part of the meat freezing procedure can be purchased as a service, or arrangements can be made to buy bulk cuts from your butcher who will then cut the meat in table cuts.

Many locker plants have facilities for the cutting up of meat

carcasses and will, in most instances, also package it for you. This locker plant service is provided by an expert butcher for locker patrons or customers owning a home freezer. The charges for such a service are usually quite reasonable.

If a meat cutting service is not available at a locker plant, consult an expert meat cutter and employ him to do this job for you.

In any case it may be desirable to study how carcasses are cut up when you attempt to freeze meat so you will be familiar with the type of cuts and know how to use each; i.e., whether you want certain portions ground for hamburger, or cut up for stew meat, or made into pot roasts. The charts showing the different carcass cuts and how they may be used (facing p. 152) will be helpful in determining how best to utilize each part of a meat animal. The following free pamphlets can also be recommended:

"Pork on the Farm, Killing, Curing, and Canning"—No. F1186; "Beef on the Farm, Slaughtering, Cutting, Curing"—No. F1415; "Lamb and Mutton on the Farm"—No. F1807, all of which are Farmer's Bulletins obtainable from the U. S. Department of Agriculture, Washington 25, D. C.

"Cashing In on Beef," "Cashing In on Lamb," "Cashing In on Pork," and "Ten Lessons on Meat" are all obtainable from National Livestock and Meat Board, 407 South Dearborn St., Chicago 5, Illinois.

About Chilling and Aging

It is very difficult and also poor practice to attempt to cut up a freshly killed carcass of any meat animal. Meat cut from warm carcasses is soft and the cuts will not hold their shape; besides, when warm meat is put into the freezer, freezing takes place too slowly and spoilage may result. The carcass should be allowed to hang at least until it becomes cold, preferably

chilled down to a temperature of approximately 32° F. Since freezing does not limit the butchering of meat animals to the cold months of the year as home butchering has done in the past, if the weather is warm, be certain to provide means of chilling the carcass in a cool room maintained at 32° to 34° F. This can be done in: (1) a chilling room at the local locker plant; (2) a chilling room at a meat market; (3) a chilling room in a home-owned walk-in cooler.

During late fall, winter, and early spring, carcasses of beef, veal, pork, and lamb can be cooled in a clean place on the premises provided the carcass is not allowed to hang at a temperature above 40° F.

Pork, lamb, and veal need not be chilled for longer than 24 hours; it is also not advisable to hold these meats much longer than 48 hours. This is especially true of pork because the fat of pork will not keep well. Pork fat held in a cooler for 8 or 10 days prior to freezing turns rancid within a few months' storage at 0° F.; whereas the fat of pork held not more than 48 hours at 32° F. before freezing will remain in good condition at 0° F. for approximately one year.

Aging effects a marked tendering of beef, so it is recommended that beef carcasses be held near the freezing point (32° F.) for at least 5 days, preferably for from 8 to 10 days at this temperature.

If mutton is frozen, a better product will result if it is aged for a short period, as is done in Scotland and England. Allow 5 to 7 days for aging mutton.

Both temperature and humidity affect the aging process and are important. If humidity is too low, there will be loss of moisture from the carcass due to evaporation. If humidity is too high (above 90 per cent) meat is likely to become slimy due to bacterial growth necessitating severe trimming of the carcass. Sliminess is much more likely to occur on cut than uncut surfaces.

High temperature hastens aging (40° to 45° F.) since it speeds the tendering process, but there is great danger from bacterial and mold growth. When beef animals are slaughtered during late autumn, winter, and early spring on the farm, they may be aged for the proper period provided the temperature does not rise above 40° F. nor fall below 28° F. If weather is too warm, spoilage may result; it is also unwise to allow the carcass to freeze before cutting and packaging. Should weather turn extremely cold, protect the carcass by covering it up, or by taking it into a heated room.

Preparing for Table Use

Cut carcasses into commercial cuts (loins, legs, rounds, etc.) then into table cuts (steaks, chops, roasts, etc.). Less desirable pieces such as the shank, brisket, flank can be boned and cut up into stew meat, can be made into corned beef, or ground to make hamburg or Salisbury steak, meat loaf, etc. The size of your roasts and steaks should be determined by the size of your family; if it is large, you will want larger roasts and steaks; if small, the smaller cuts will be more practical.

To conserve freezer space, pieces of meat containing a high percentage of bone should be boned before freezing. A rolled roast, for example, takes up much less freezer space than a standing rib roast, and sirloin cuts of steak pack more compactly than T-bones. After boning roasts, roll the meat tightly, tie, then cut into family size pieces.

Contrary to what most persons think, a fore quarter of beef provides a slightly greater quantity of usable meat than a hind quarter, in some instances as much as 6 per cent more.

Proper Packaging

It is best to pack meats in small packages for they will freeze faster than large ones. Pack one roast, or one large steak to a

package; two medium steaks; 4, 6, or 8 chops; 4, 6, or 8 hamburg patties; etc.

Some meats can be packaged in shallow Cellophane-lined, rectangular waxed paperboard cartons similar to those used for vegetables. Cartons measuring 4 inches by 6 inches and $1^1/_2$ inches deep are suitable for hamburger and sausage. Larger ones about 8 inches by 10 inches and 2 inches deep are best for steaks and chops.

Roasts because of size, shape, and bulk are wrapped in moisture-vaporproof paper or sheeting, then inserted in a stockinette (similar to that used on commercial hams) so as to hold the wrapping close to the surface of the meat and to protect the wrapping from tearing during storage. There are several excellent moisture-vaporproof sheetings on the market: moistureproof Cellophane; specially coated vegetable parchment paper; Pliofilm; aluminum foil laminated (fused together) with moistureproof paper; and aluminum foil laminated with moistureproof Cellophane. These sheetings give not only the proper protection against drying out, but are stainproof as well. *Never* use plain butcher paper for wrapping meats, as it has none of these qualities for protection of your meats during frozen storage.

Meat, especially, must be protected from drying out during freezing and storage. Otherwise, the surface fat loses its film of moisture, oxidation takes place, and rancidity results.

All meat packages should be labeled, indicating contents and date packed. This can be done with a soft crayon or china marking pencil where meats are packaged in cartons; wrapped meats should have a tag bearing this information which can be either tied to the package or slipped underneath the stockinette. If a kitchen scale is available, it is also advisable to label the packages with the weight of the contents as this will help you to determine cooking time for roasts and broiling time for thick steaks.

Roasts: Wrap each roast individually, using a flexible moisture-proof sheeting such as mentioned above. Wrap so as to eliminate as much air from the package as possible by pressing the wrapping close to the roast. In almost every instance, it is good practice to slip the wrapped roast into a stockinette (described above) by first tying the loose end of the tubular webbing, inserting the roast, and pulling the stockinette tight around the meat; then cut off webbing leaving enough length to tie the remaining end securely. Tie label to one end of stockinette, or insert label under stockinette before the package is tied.

Steaks, Chops: Trim steaks and chops of excessive fat or bone, then pack into large-size waxed rectangular top-opening carton which has been lined with a sheet of moistureproof Cellophane or vegetable parchment paper. Cartons are deep enough for two layers of steaks or chops if of medium thickness. Separate each layer of meat with *two pieces of moistureproof paper or Cellophane* to keep them from freezing together so they can be separated while still solidly frozen. Tuck moistureproof lining of carton around top and sides of meat; close carton; label package; then overwrap carton with moistureproof Cellophane or other heat-sealing paper, heat-seal the overlapping edges to make the package airtight.

Bulk Ground Meat: Bulk ground meat (hamburg, sausage, etc.) is simply packed in a lined carton such as is used for vegetables; or, in a heavily waxed tub type container such as is used for fruits; heat-seal the carton or container if necessary.

Ground Meat Patties: Package same as steaks and chops.

Swiss Steak: Depending upon size and shape; can be packaged same as a roast, or in carton same as a steak.

Bulk Stew Meat: Package same as a roast.

Cut-Up Stew Meat: Package same as bulk ground meat.

Legs and Shanks: Package same as roasts.

Variety Meats: Heart, liver, etc., may be frozen although they do not retain their freshness in long-continued storage as the other meats do. No longer than 4 or 5 months' storage is recommended for frozen variety meats. Hearts and livers may be sliced and packaged the same as steaks.

Freeze Meat Immediately

Meat is too costly to take any chances with spoilage, so get

it to the freezer immediately after it is packaged and ready. Since it takes approximately 14 hours to freeze a $3^3/_4$-pound roast in still air at −10° F., and about 7 hours at the same temperature in an air blast, you can readily see the need for getting meats into the freezer as quickly as possible. Meats should be brought down to at least 0° F. within 24 hours, so do not pack a home freezer too tight with unfrozen meats, else freezing will take place too slowly. If you have a great quantity to freeze, it is better to take it to a locker plant for freezing and when frozen transfer it back to your home freezer.

Importance of Zero Storage

The deterioration of pork is much more noticeable than in the case of other meats if the storage temperature fluctuates widely above 0° F. temperature. At 10° to 15° F., pork will not keep in good condition longer than 4 months; at 0° F., or below, it will keep well for as long as 12 months.

Should You Freeze Cured Meats?

The answer is, yes, if your freezing storage space permits. However, it is not recommended that cured meats be frozen at the expense of fresh meat preservation. If there is room in the freezer, especially during summer months when the fat of cured and smoked meats is likely to become slightly rancid, by all means freeze cured and smoked meats as freezing will keep them in perfect condition.

Care should be taken in packing cured meats in tight packages, particularly those which have been smoked. If smoked meats are poorly packaged and placed in a home freezer or locker, the flavor of the smoke will travel to other products held in the freezer. However, moisture-vaporproof wrappings, e.g., moistureproof Cellophane, prevent transfer of smoky flavors.

BEEF and VEAL

(Top Left) The thick, more tender loin (4) and rib (5) are suitable for frying and roasting; the chuck (8), rump (3), round (2), for Swiss steaks and pot roasts; the thinner shanks (1), flank (6), plate (7), neck (9), for stew and ground meat.

(Top Right) Cut rib roast (*a*) from thin stewing plate (*b*).

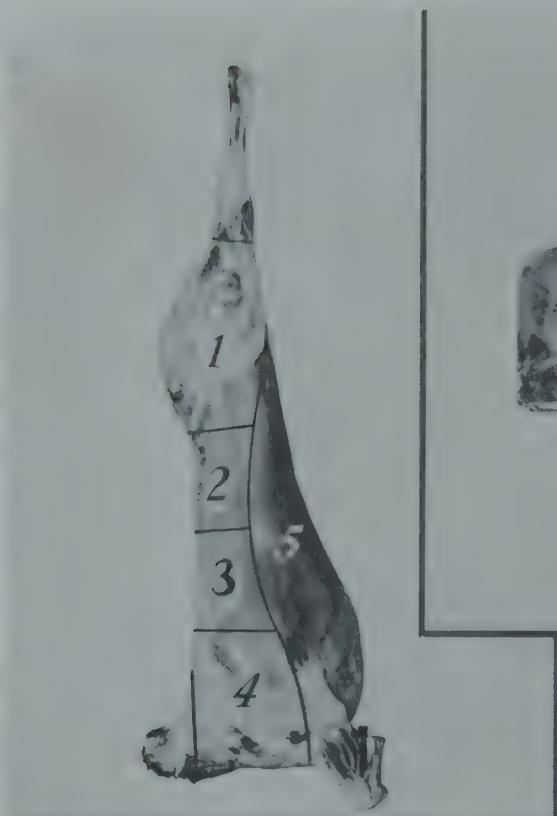
(Bottom Left) Cut round (*a*), rump (*b*), sirloin (*c*), and T-bone steaks (*d*).

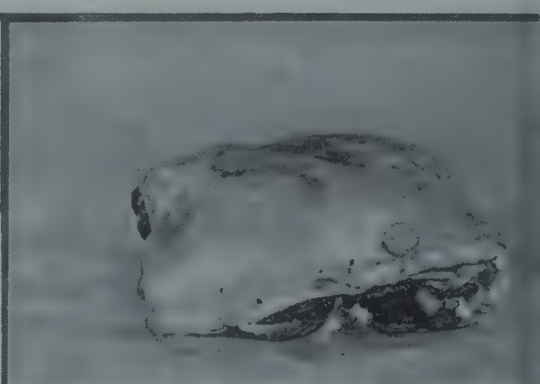
(Center Right) Bone round and cut into tip (*a*), top (*b*), and bottom (*c*). See below.

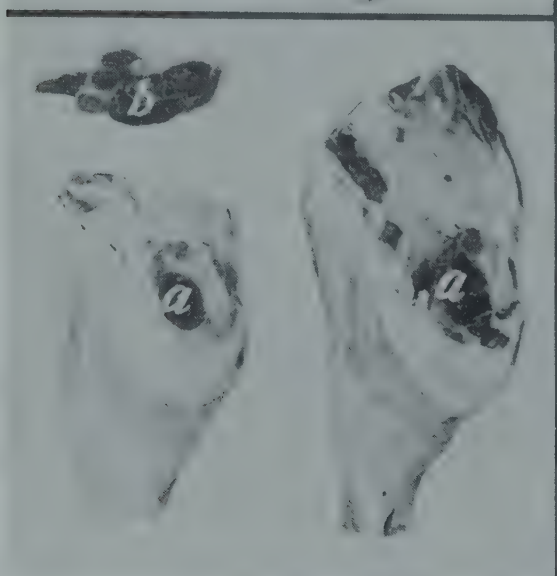
(Bottom Right) The result: Trim, compact cuts, ready for wrapping.

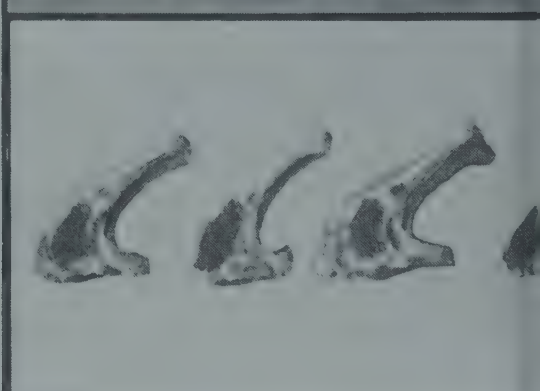
The meat cutting photographs for beef, lamb and pork reproduced on this and the following two pages are printed through the courtesy of the Bureau of Animal Industry, Agricultural Research Administration, U. S. Department of Agriculture, from the government folder *Freezing Meat and Poultry Products.*

LAMB









(Top Left) Trim legs (1); shoulders (4) into roasts; cut ribs (3), loin (2) into chops; bone brea (5), shanks, neck, for stew or ground lamb.

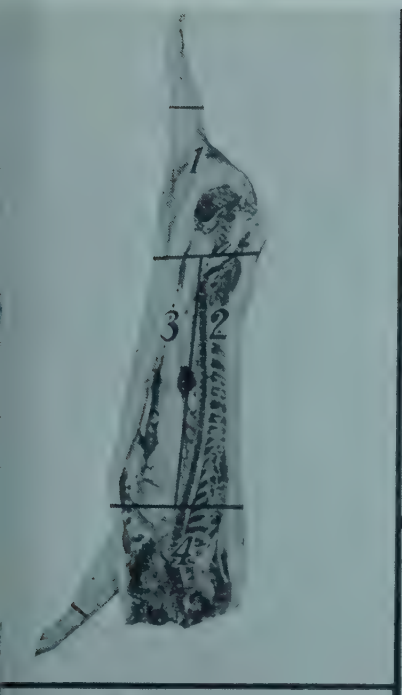
(Top Right) First make cross-carcass cuts to give: A five-rib shoulder (*a*) leaving other ribs rack (*b*); loin (*c*); and leg (*d*).

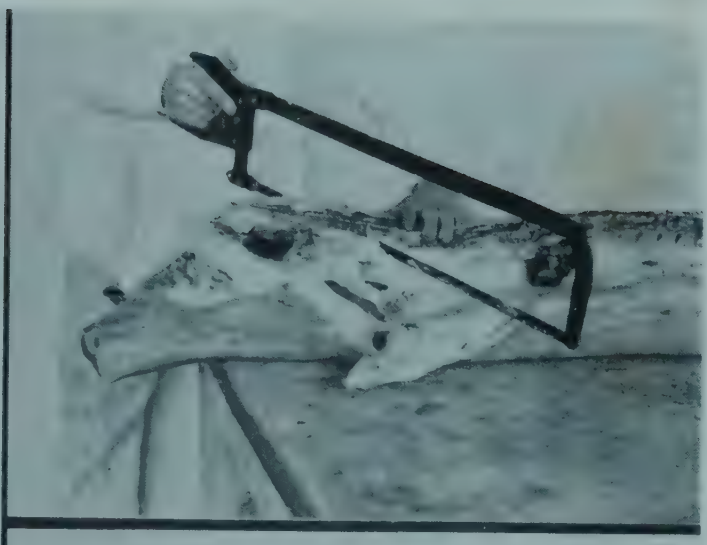
(Center Right) Bone shoulder to give compact roast. Where there is a large proportion of bone in piece of meat, it is advisable to remove the bone and roll or tie.

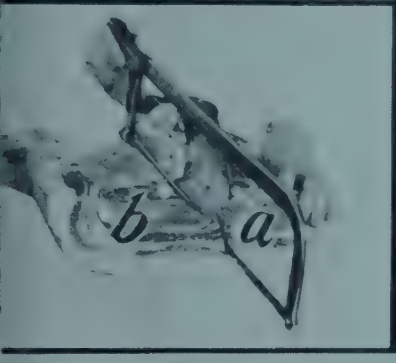
(Bottom Left) Lamb steak or chops (*b*) may be cut from leg (*a*). Trim as pictured for compactnes

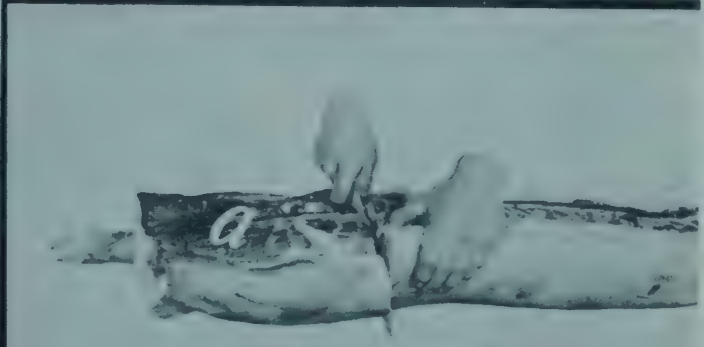
(Bottom Right) Storage space is saved by trimming bone ends of rib chops to package more compact

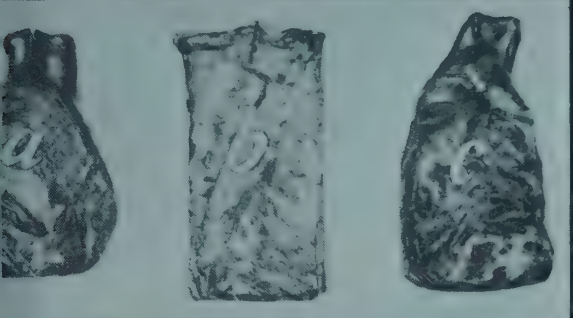
PORK











(Top Left) Cut or slice the thick ham (1), loin (2), and shoulder (4) into roasts, steaks, or chops. Trim the bacon strip (3) for curing, or cut into boiling pieces. Trim all meat closely, using lean for sausage and fat for lard.

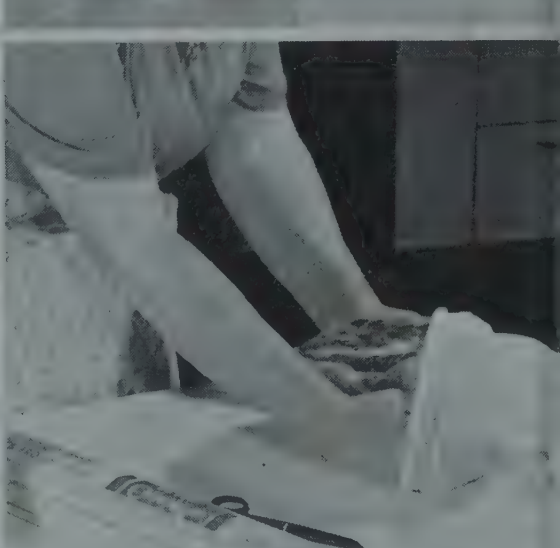
(Top Right) Remove feet, then cut ham at right angles to hind shank.

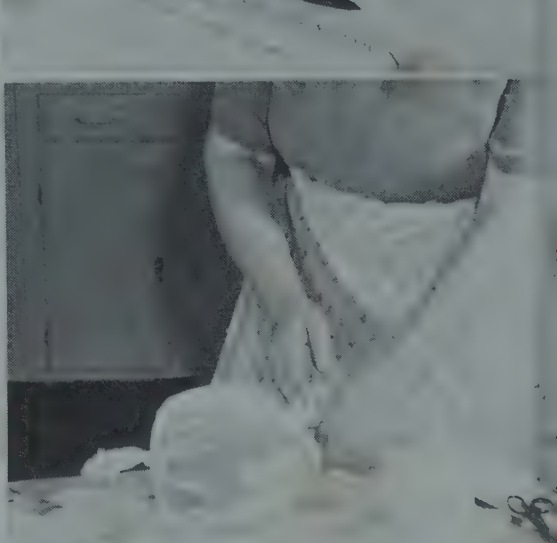
(Center Right) Next remove three-rib shoulder (*a*) as pictured.

(Bottom Right) Then cut the fat back (*a*) from the lean loin.

(Center Left) Cut the thick loin (*a*) from the thin bacon (*b*).

(Bottom Left) Trim ham (*a*), bacon (*b*), and shoulder (*c*) smoothly. To save freezer space these cuts can be cured and smoked, although freezing the cured meats helps preserve their flavor especially during hot weather months.





(Top) Ribs are removed from backbone.
(Center) Each rib bone is carefully removed.
(Bottom) Tie roast at close, even intervals.

(Top) Cut large roast into family size portion
(Center) Roasts are then wrapped in Celloph
(Bottom) Then are inserted in stockinette; tag

Pointers for Making Sausage for Freezing

In making sausage for freezing, remember two things about seasonings: (1) salt seems to accelerate the development of rancidity in fat meats; (2) spices and other seasoning ingredients actually retard the development of rancidity. So add all the seasoning ingredients *except salt* which may be added just before or during cooking.

If salt is added to the sausage before freezing, do not keep it for more than 6 months at 0° F., otherwise it can be kept as long as 9 to 10 months at this temperature.

Back fat, loin trimmings, shoulders, blade meats, or butts make excellent sausage when made in the proportion of 50% fat and 50% lean meat. Belly trimmings or jowls may also be used for sausage making if the pork carcass is in excellent condition. Keep the pork cold while working with it; and keep it away from contact with equipment or tools that have been used to handle cured meat. Have all grinding equipment thoroughly clean. Grind meat with $^1/_8$-inch, $^3/_{16}$-inch, or $^5/_{32}$-inch grinding plates. As pork is ground, sprinkle with the seasoning ingredients (except salt). Mix only long enough to distribute the seasonings evenly—a too long mixing period will cause "smearing."

What to Do with Bones and Trimmings

Excellent soup stock can be made from the quantity of bones taken from meat when freezing. Make soup stock in the regular manner, skim off excess fat, then freeze the stock by pouring it into water-tight containers (such as are recommended for fruits), allowing about an inch at the top for expansion of the liquid during freezing. Place in freezer immediately, or refrigerate until you can take it to the locker plant.

There will be considerable trimmings from a carcass too, which can be cooked with the bones and used in the soup stock

(it need, or need not be strained out before freezing); or trimmings may be frozen for use as dog food.

POULTRY: CHICKENS, DUCKS, TURKEYS

Like all other foods, select only the best for freezing; young, healthy well-finished birds. The Poultry and Egg National Board published the following characteristics for best selection of chickens:

Broiler: 1 to $2^1/_2$ pounds; 8 to 12 weeks old; smooth, thin skin; tender muscles with very thin connective tissue; small amount of fat under skin over the back; flexible tipped breastbone.

Fryer: $2^1/_2$ to $3^1/_2$ pounds; 14 to 20 weeks old; same as above except size and age, meaty enough to be disjointed and cut into serving pieces; noticeable layering (finish) of fat underneath the skin.

Roaster: Over $3^1/_2$ pounds; 5 to 9 months old male; tender, soft-meated muscles; smooth skin; large enough in size and meaty enough to be roasted whole; excellent layering of fat underneath skin; flexible tipped breastbone; connective tissue only slightly more developed than in fryer but still thin.

Capon: 4 pounds and over; 7 to 10 months old unsexed male; popular size 6 to 7 pounds; full-breasted, yielding a high proportion of white meat.

Pullet: $2^1/_2$ to $5^1/_2$ pounds; 4 to 9 months old young hen; similar to roaster except body is shorter and plumper; flexible tipped breastbone; smaller weights often used as fryers.

Fowl: Female of any weight; age over 1 year; thick, coarse skin; muscles well developed with thick connective tissue; high proportion of fat underneath skin; breastbone no longer flexible.

In selecting turkeys and ducks, the same general characteristics given for roasters above will help to obtain the best selection. Both ducks and turkeys should be plump and full-breasted, preferably with a short body. If you want turkeys from 8 to 15 pounds, select hen turkeys; at this weight they are usually better finished than toms of the same weight. Select tom turkeys if you want birds weighing 16 pounds or over.

Killing the Birds

Birds should be starved for 24 hours prior to killing in order to empty the crop and intestines. Good bleeding is essential to good freezing preservation which makes the following killing procedure the recommended one: hang the bird by the feet; with a sharp pointed knife in one hand, and holding the mouth of the bird open with the other, insert point of knife down throat and sever the juglar vein (bird will start bleeding immediately). Then insert the knife blade in the cleft of the roof of the mouth, running it back in a line between the eye and ear to pierce the third lobe of the brain and giving it a quarter turn to destroy brain tissues. Main tail and wing feathers can be removed immediately.

When picking the birds, avoid bruising or tearing the skin; caution must also be taken not to over-cook the skin when scalding to remove feathers. Either dry picking or semi-scalding is recommended. These methods of removing the feathers can only be done when the birds have been bled and debrained as described above. To semi-scald, do not use boiling water, but water at only 125° to 130° F. for from 20 to 30 seconds. Remove pinfeathers either by singeing or by the wax method (see page 216 for wax method). Refrigerate overnight before preparing for freezing.

Dressing stuffed prior to freezing may cause (1) harmful bacterial contamination and thus spoilage of the poultry for eating, and (2) deterioration of quality of the roasted fowl. Moreover, the dressing is apt to be flat and soggy in flavor and appearance.

You can save just as much time if you will prepare the dry ingredients that go into your dressing the day before your big holiday dinner, and store them in the cupboard. You can also prepare the moist ingredients the day before and keep them in your refrigerator.

On roasting day, it will take only 15 to 20 minutes to combine your dry and wet ingredients and stuff the defrosted bird with the dressing. This approach will insure fresh, tasty dressing without risking spoilage and deterioration of flavor, taste, and appearance.

ROASTERS

Prepare: Remove head, shanks (feet), and oil sac. Make cut in abdomen as small as possible, and draw carefully, making sure lungs are completely removed. Wash thoroughly in cold running water; drain. Clean and wash liver, gizzard, and heart.

Package: Wrap giblets separately in moistureproof paper and insert in cavity of bird; then wrap for freezing the same as roasts; label indicating weight of bird as well as date and contents.

Freeze immediately and store at 0° F., or below.

BROILERS

Prepare: Remove head, shanks (feet), and oil sac. Then carefully draw bird. Young, soft-boned birds can be split down the back from neck to rear along the backbone, and then cut in two pieces along the breastbone. Wash thoroughly in cold running water; drain. Clean and wash liver, gizzard, heart.

Package: Place halved bird (which can be quartered when cooked if desired) together with two pieces of moistureproof paper between halves. Wrap giblets separately in moistureproof paper and place between the halves. Wrap for freezing the same as roasts; label.

Freeze immediately and store at 0° F., or below.

DISJOINTED CHICKEN

Prepare: Remove head, shanks (feet), and oil sac. Draw bird and cut up or disjoint. Wash thoroughly in cold running water; drain.

Package: Use flat, folding waxed carton (such as is used for steaks) which is large enough to hold all the pieces; pack pieces in carton, wrapping giblets separately in moistureproof paper before they are placed with the other pieces; close carton; label; over-wrap

carton with moistureproof Cellophane or paper and heat-seal overwrapping.

Freeze immediately and store at 0° F., or below.

Don't be worried if the bones of poultry, which have been frozen, turn dark—think nothing of it! The bones darken from purely natural causes. Freezing and thawing hemolyze the blood cells of the bone marrow, liberating hemoglobin which penetrates the walls of the bones and cause discoloration.

Freezing and storing conditions do not influence bone darkening sufficiently to be of practical importance, and freezing rate, temperature of storage and length of storage period, and temperature fluctuations during storage do not appear to affect the degree of bone discoloration.

Different methods of cooking, including frying, boiling, and roasting, do not differ greatly as far as affecting the development of bone discoloration in frozen fowl.

For all practical purposes, disregard any dark bones and go ahead and enjoy your frozen poultry.

FISH

Freeze fish the same day they are caught if possible. If not possible, be sure to refrigerate until freezing can be undertaken. Prepare fish for freezing just as for cooking: Scale, eviscerate, and wash thoroughly. Behead and cut off fins. Freeze small fish whole; cut large fish into steaks or fillets. Steaks are prepared by cutting the fish crosswise, retaining one vertebra in each steak. Fillets are cut, one from each side of the fish, running the knife along the backbone, removing a fillet, then turning the fish over and cutting the similar piece from the other side of backbone. The few bones remaining in the fillet may be pulled or cut out.

Fillets and steaks cut from lean fish such as haddock and cod should be immersed for 20 seconds in a 10 per cent brine solution (1 pound salt to $4^1/_2$ quarts water) to reduce leakage

when the fish is thawed. (Fatty fish such as salmon and mackerel should not be brined.) Remove lean fish from brine and let drain a few seconds before packaging.

To package, wrap individual fish fillets or steaks in moisture-vaporproof paper or sheeting and pack in flat, rectangular folding waxed carton; close carton; label; over-wrap carton with moistureproof Cellophane or paper and heat-seal. Fish may also be wrapped only in strong, heavy, moisture-vapor-proof paper and tied or taped securely.

Whole fish may be given an ice glaze for protection during storage. First place the fish in the freezer to freeze; as soon as it is frozen, take fish out and dip it in near-freezing ice water; place it back in the freezer a few minutes to harden the glaze; take fish out again and repeat the dipping. When a good glaze has been formed, wrap the fish in moistureproof paper and store in the freezer. The ice glaze needs either a wrapping for protection against chipping during storage, or the glaze must be renewed every few weeks. The glaze may be renewed by again dipping the frozen fish in cold water.

SHELLFISH

Wash oysters, clams, and scallops in clean sea water (if it is obtainable) diluted with an equal volume of fresh water, or use a brine containing 1 per cent salt. Pack in liquid-tight containers such as are used for fruit, allowing headroom for expansion.

Crabs and lobsters should be steamed or boiled in water for 15 to 20 minutes; then cooled, and the meat taken from the shells. Package cooked meats in cartons such as are used for either fruits or vegetables.

Since cooked shrimp toughens during storage, it is best to remove and discard the heads, then package and freeze meat in the shells without cooking.

DAIRY PRODUCTS

EGGS

Eggs should not be frozen in the shell, since freezing causes them to expand and crack. They should be broken out of the shell and frozen either with or without separating into yolks and whites.

For Cooking—It is best to freeze eggs with a purpose, i.e., in small packages containing specific amounts for certain purposes such as for angel cakes, or for mayonnaise. For once eggs have been frozen, stored, and thawed, they should be used immediately; any left-over thawed eggs may be wasted. Neither can eggs for cooking and eggs for mayonnaise and salad dressing be used interchangeably because eggs for cooking are frozen with sugar or corn syrup, and eggs for use in mayonnaise and salad dressing are frozen with salt. Egg whites frozen separately, however, may be used for any cooking purpose because they are frozen "as is" without the addition of any sweetening agent or salt.

It is the yolk of the egg which becomes gummy if not mixed with either corn syrup, sugar, or salt. For separate whites, simply freeze desired amounts in suitable container.

Mix separate yolks with either 1 tablespoon of sugar or corn syrup per cup of yolks; or 2 teaspoons salt per 2 cups of yolks.

Mix whole eggs with either 1 tablespoon of sugar or corn syrup per each 2 cups eggs; or 1 teaspoon salt per each 2 cups.

To Package Eggs: Small paper muffin cups are excellent for freezing the egg requirements of a 2- or 3-egg butter cake; pour mixed amount into the cups which have been placed in muffin tins to hold their shape; freeze; then remove and wrap with moisture-vaporproof paper and heat-seal.

When larger quantities are frozen, they can be poured into a container such as is used for fruit, allowing headroom for expansion during freezing.

Egg cubes (each containing approximately either 1 whole egg,

2 egg whites, or 2 egg yolks) can be frozen by pouring the eggs into a refrigerator tray, using the ice cube divider. Freeze the product in freezer and when frozen, remove the individual blocks (as you would ice cubes—although more carefully), wrap in moisture-vapor-proof paper and pack in a flat, folding waxed carton for storage.

For Poaching and Frying—A quite satisfactory method of freezing whole eggs without the addition of either sugar or salt has been found which will make them usable for either poaching or frying.

Line muffin tins with paper muffin cups. Break and carefully drop an egg into each, taking care not to break the yolk, freeze; remove paper cups from tins; pack in a flat, folding waxed carton for storage; over-wrap carton and heat-seal with moistureproof paper or sheeting.

CREAM

Cream containing 40 per cent, or more, butter fat can be frozen and stored for a few months without marked deterioration. The cream should first be pasteurized, then packaged in heavily waxed containers (liquid-tight ones such as are used for fruits), labeled, and frozen as rapidly as possible. It should be stored at the lowest temperature available. Before use, the thawed cream should be put through a hand homogenizer in order to make it smooth.

CHEESE

Select cheeses at the just-right stage of ripeness, then freeze to retain the fine quality until served. Defrost all cheeses completely and bring to room temperature for serving—as long as any cold remains in the product the flavor is not so well-defined—or so the epicure tells us. Soft cheeses such as Liederkranz or Camembert can be frozen to prevent further ripening beyond the desired degree. Bleu cheese keeps much longer in the freezer than in the refrigrator, although it becomes slightly

crumbly, which makes it ideal for use in salads and salad dressings.

Hard, natural cheeses such as cheddar, become crumbly after long freezer storage, but the flavor is not impaired.

Cottage cheese, packed solidly in cartons and tightly closed, may be held at 0° F. for several weeks.

Heavy aluminum foil is the best wrapping material for cheeses to be stored more than a week or two.

BUTTER AND LARD

No special preparation for packaging is necessary to freeze butter or lard. It may be packed in tins lined with vegetable parchment paper, in waxed cartons lined with parchment paper, or in parchment paper alone. Either of these products will keep far better at 0° F. for a much longer period of time than they will in an ordinary household refrigerator.

CHAPTER VIII

The Freezer Shows Off with Gourmet Foods

Day in and day out a freezer is a dependable, steady performer. But, like all good performers, it has its moments of brilliance—and just has to "show off." No better time for this "up-staging" than when unexpected guests arrive for dinner, or the gang comes in for a late supper or early breakfast. Gone is that last-minute party panic—for the freezer in your pantry supplies party fare on a minute's notice—cooked foods ready to heat and serve.

For whatever occasion may arise, freeze complete menus except for the salad—and there are even a few recipes for salads that give quality finished products. Hot hors d'oeuvres or fancy canapes, tea sandwiches, hot or cold soup of most any kind, your special roll or biscuit recipe, mouth-watering main course casseroles, and desserts—the kind that look *almost* too good to eat. All these good things go into the freezer and come out again to be served with confidence and pride, and you will soon become known as the "Best Cook in the Neighborhood" when the freezer plans your parties.

It saves time and trouble to freeze double or triple quantities of your favorite meals. Cook copiously on a free day, then sit back for weeks to come and enjoy yourself while serving family and company meals with ease. You'll find it also helps to prepare related dishes all at one time. For instance, with half a dozen or more chickens, you can prepare these special dishes: individual chicken pies, Brunswick stew, fried chicken, Breast

of Chicken Supreme, Chicken Livers in Sherry, and chicken scrapple—so many different treats from that wonderful standby, chicken.

To add the gourmet touch to any meal, stock your freezer with a variety of sauces. Tomato sauce for any Italian dish or old-fashioned, substantial meat loaf; Creole sauce for fish—boiled or baked; curry sauce for leftover meats and poultry, and that old favorite of the younger set—barbecue sauce for spareribs or hamburgers. For desserts, don't forget to use your fruit purées for wonderful sauces for puddings or ice cream, and keep some rich chocolate and butterscotch sauce on hand for sundaes and cream puff toppings. Yes, frozen cooked foods can serve the homemaker in limitless ways bounded only by her own desires, imagination, and forethought.

Consider the daily chore of preparing lunches for the school child or worker. This task can be minimized to merely making a trip to the freezer to get a complete frozen lunch for either purpose. Such a frozen lunch might consist of sandwiches; mixed fruit salad, or tomato or orange juice; cake, cookies, or pie. By noon the frozen lunch carried to school or to work will be thawed and ready to eat.

Then there is the family who spends week-ends at a camp cabin. Up until the time the home freezer entered family life in the rough, food supply was always the first and last thing they had to worry about—getting all the perishable food supply upon arrival and consuming or disposing of all but the staple flour and sugar items before leaving. Now with the freezer, a supply of fresh bread, rolls, and baked desserts can always be on hand, as well as meats, butter, vegetables, and cooked camp delicacies such as real hole-baked beans. Not to mention the convenience of having prepared foods ready to heat and serve, there's the time saved for mother to really enjoy her vacation, too.

Aside from the special instances where frozen cooked foods serve the family well, there is the every-day advantage of

having a virtual delicatessen at your fingertips; breads, pies, rolls, cakes, and prepared dishes which can be whisked into the oven when the cook gets home too late to be more leisurely about it.

Many home freezer owners plan to have left-overs of prepared dishes that take a long time to fix, a lot of fuel, or special ingredients—dishes such as stuffed baked potatoes or individual beef pies. You remember the day when some foods either had to be served to a large family, or they had to be eaten day after day until the last spoonful vanished (sometimes surreptitiously in the garbage can), or you had to laboriously dissect a large-quantity recipe into ingredients for a one-meal serving. With a home freezer that day is gone forever, and now you can plan to double your recipes of those dishes which will freeze well, serve what is needed at the first meal and freeze the remainder, thereby making the meal preparation of one meal do the work for several.

Before filling up the freezer with prepared foods, decide carefully whether they really will save you time when you need it—for some foods take more time to get ready for serving after they are frozen than when mixed up fresh and cooked or baked. You'll want to decide for yourself which cooked foods are practical and economical for freezing at home.

A few vegetables, such as squash and beets, may be classed with the cooked food group, since they are cooked until done during their preparation for freezing. The same is true of some of the shellfish, such as lobster and crabmeat.

Some of the vegetables (carrots, asparagus, peas, spinach) may be cooked until done, then puréed (see p. 145) and frozen for use in cream soups, baby foods, and special diets.

All meats, with the exception of pork and pork products such as sausage, will freeze well already oven cooked. Fried meats lose their crispness, become soggy, and develop a "warmed over" flavor during storage. Roast fowl and turkey freeze well,

too. With large fowl and turkey this is especially helpful because there always seems to be some left over, no matter how carefully we plan the size for the occasion. Remove the meat from the frame before it is frozen, pack into containers such as are used for freezing fruits, then cover with a cream sauce or gravy for use later in meat pies, hash, or croquettes. For other purposes, wrap the cold meat separately in an air-tight aluminum foil package and store the left over dressing and gravy in separate containers. Meat pies may be made and baked before they are frozen, or they may be frozen unbaked and baked when taken out of the freezer at serving time.

Among other meat and prepared foods which can be cooked and frozen are chop suey and chow mein, Chinese pork subgum, oven-baked beans, candied sweet potatoes, corned beef and corned beef hash, Creole spaghetti, spaghetti and meat balls, Spanish rice, beef stew, veal and lamb stew, chicken a la King, Welsh rarebit, hamburg steak, codfish cakes, seafood en casserole, cooked vegetables in sauces (such as Harvard beets), French fried potatoes, cottage fried potatoes, potato chips, and pork and beans with tomato style sauce.

Asparagus purée, split pea, navy bean and mixed vegetable are among the soups that freeze well.

All kinds of baked bread, rolls, and muffins freeze so well that there is no difference from the taste or texture of the same freshly baked products.

Angel food, sponge and butter cakes *with icing*, all types of cup cakes, and every kind of cookie are excellent products to bake and freeze. For icing cakes, cup cakes, and breakfast rolls, use the cooked or butter icing since those made with egg whites will not stand up under freezing and storage.

Pies and pie mixes (pumpkin, mince meat, sweet potato) may be frozen successfully. Fresh fruit pies top the list as favorites. Gelatin, cornstarch, or tapioca thickened cream-filled pies freeze well also; this includes lemon and chocolate. But

omit the custard type of filled pie, as it does not freeze successfully.

All types of bread, cookie dough, and most cake and muffin batters will freeze. These same products are excellent when baked before packaging and freezing.

SUCCESSFUL FROZEN SALADS

Freezing destroys the crispness and often brings about color and flavor changes in raw vegetables. For this reason, vegetable salads are unsuited for freezing. Eggs are often used in salads, but in freezer storage the whites of hardcooked eggs toughen and nuts used in salads or salad dressings are likely to discolor and become bitter. Mayonnaise and cooked dressings are both unsuited to freezing.

Don't get discouraged—there are salads that are tops for freezing. They are the type that were formerly frozen in the ice trays of the refrigerator. These salads usually have as a base combinations of cream or cottage cheese, whipped cream, or mayonnaise and often gelatin which improves mayonnaise and whipped cream mixtures. Use your best frozen salad recipe. Sometimes these frozen mixtures are also served as desserts.

Diced fruits may be combined and frozen together to be defrosted later and then mixed with a salad dressing at serving time. Meats and poultry may also be diced and frozen, then thawed and mixed with other salad ingredients when needed.

SANDWICH MAKING MADE EASY

Take one morning a week to prepare enough sandwiches to fill those daily lunch boxes. Doing it all at once saves time and the effort in assembling sandwich ingredients.

Use a variety of breads, rye, whole wheat, raisin, fruit and

nut, cheese, date or brown bread, and store the leftover loaves in the freezer until sandwich-making time next week. Home style white bread seems better for sandwiches than the softer, fluffier breads, but even these are all right if the loaves are day-old.

Softened butter or butter substitute is a better spread than mayonnaise because it keeps the fillings from soaking through the bread. Be sure to cover each slice of bread completely.

For fillings, use any of the family favorites: meat loaf, cold cuts, cheese, roast beef, chicken or turkey; or try peanut butter and bacon, cheese and olives, ham, chicken and tuna mixed with mayonnaise. Remember to avoid jelly in sandwiches. Lettuce, celery, watercress, and other crisp vegetables should be added fresh to the lunch box each day—they just don't freeze.

A WORD TO THE WISE

Cooking—Don't be afraid to try your favorite recipes since most cooked foods take readily to the freezer. Your best recipes will be better than ever when they come out of the freezer if you will remember to add *Ac'cent* (monosodium glutamate) to the cooked product before freezing. If you should forget—then add *Ac'cent* when you reheat the cooked foods for serving. Remember not to *overcook* foods for freezing. Season lightly, add more seasoning when reheating, since some spices do change flavor in freezer storage (see page 169). Blend fat and flour for gravies or sauces thoroughly, for best results, just before packaging beat at high speed with an electric mixer or use a mechanical blender. Skim off all excess fat from meat or chicken stocks before freezing.

Packaging—Use *only* freezer packaging materials and pack individual servings or in one-meal-size amounts. Small packages freeze and thaw quickly—factors that contribute a great deal to the goodness of the ready-to-serve foods. Use shallow

baking dishes, individual casseroles, or aluminum foil, for foods that are to be reheated in the oven. Cover tightly with foil or place in boxes and over-wrap. Coffee and shortening cans make useful containers for cooked foods, but be sure to cover them and then seal the edges with tape. When foods are to be used within a week or two a few liberties may be taken—use household-weight aluminum foil, heavy waxed paper or plastic bowl covers. Make a solid pack and keep out as much air as possible, and remember to allow space for expansion when freezing liquid foods. In filling packages with soft foods, such as creamed dishes, place two pieces of Cellophane every inch or so throughout the package. This will speed reheating and prevent mashing the food to be reheated. Be sure to date each package and label clearly. It may also be helpful to add: "Use before—month/year."

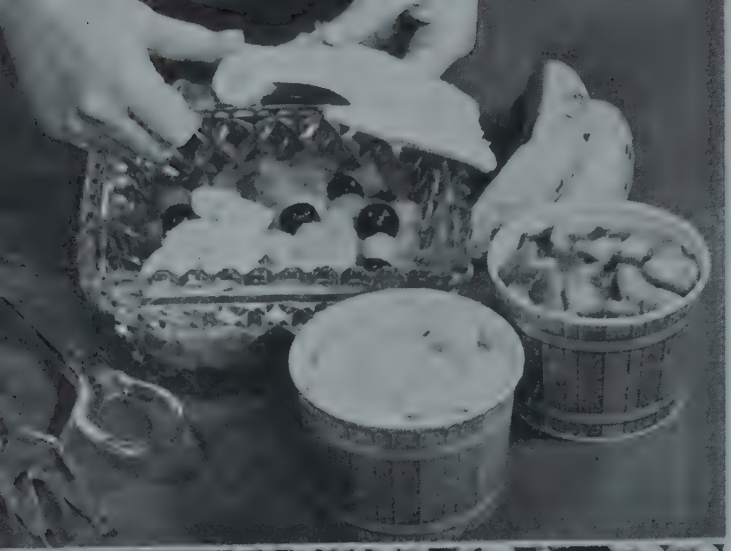
Freezing—Cool quickly before freezing by setting cooking containers in cold running water, in ice water, or a pan of ice cubes. Fill freezing cartons carefully then freeze immediately and as quickly as possible at a temperature of 0° F. or lower.

Reheat and Use—For good freezer management and good quality cooked foods be sure to use frozen cooked foods within the time they will store safely. See table on page 175. When reheating ready-to-serve foods that are completely thawed, simply heat to serving temperature in the top of a double boiler or in the oven. Stir as little as possible and do not overheat frozen cooked foods.

For quick thawing, immerse water-tight packages in cool running water. Some paper containers are easily peeled off to remove the contents. Even without thawing, food will slide easily from freezer jars wider at the mouth than at the base.

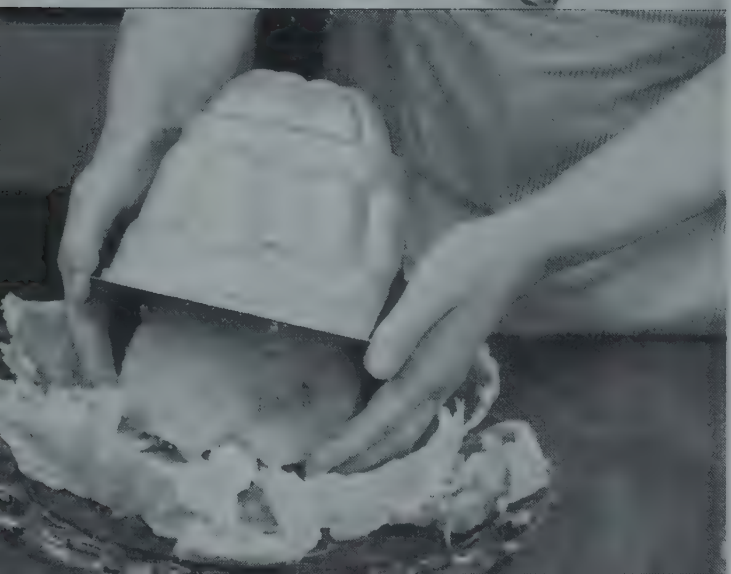
Cooked foods are perishable, so keep in refrigerator during—and most especially—after thawing. Never refreeze cooked foods, once they are thawed. Baked goods are best when thawed in the unopened package at room temperature.

More homemakers than ever before are freezing cooked foods. Shown above are the newest types of freezing containers (aluminum, glass, stainless steel) for pre-cooked products. These containers are reusable and, except for the Ball glass freezer jar, may be used to reheat the product for serving.



Freeze fruits separately, then combine to suit yourself. Add fresh fruits if desired to make an endless variety of salads, compotes, or desserts.

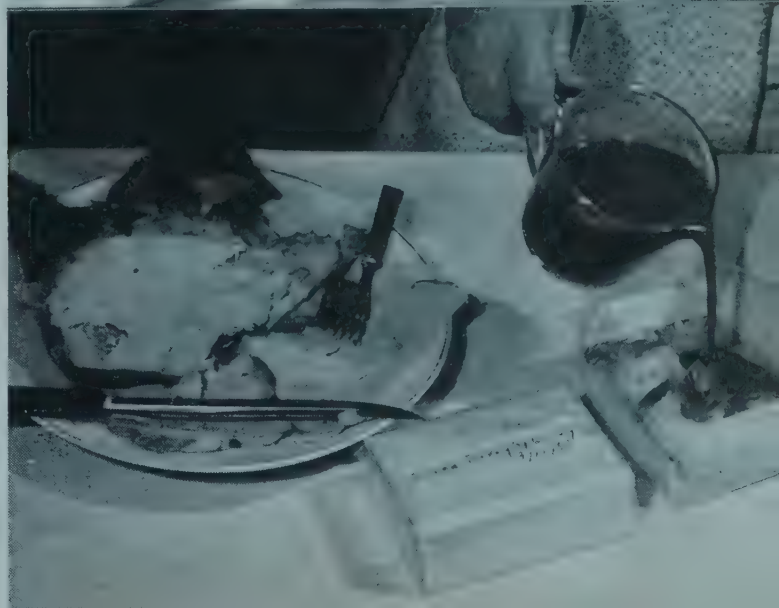
Delicious, tasty cranberry orange relish freezes well. Complete instructions for making and freezing this relish may be found on page 131.



Salads come out of the freezer, too! Gelatin base salads add lots of color and flavor to your menus throughout the year.

One of the most useful items in your freezer: Concentrated soup stock is the base for all kinds of soups, sauces, and gravies.

Pre-cooked foods from the freezer ready to heat and serve. Reading clockwise from lower left hand corner: are chicken croquettes, stuffed green peppers, meat pot pie, spaghetti and meatballs, baked beans, lima beans and frankfurters, and rich chicken a la king. In the center—sweet potatoes and marshmallows.



Leftovers are never a problem when you own a home freezer. Package carefully, seal tightly, and store only for short periods of time. Cover cooked poultry and meats completely with gravy to prevent drying and loss of flavor.

Look good enough to eat? These desserts came out of a home freezer. Use your favorite recipe, package carefully.

SEASONINGS MAY BE PROBLEMS

Off-flavors may develop in the freezer storage of cooked foods. These flavor changes are quite often caused by the seasonings used in the preparation of the ready-to-serve products. Pepper, onion, cloves and *synthetic* vanilla may become strong and bitter. Curry may develop a musty off-flavor, while celery seasonings may become "strong flavored." For this reason, it is best to season only lightly before freezing, and at the time of reheating for serving make the final adjustments to taste.

Poor packaging materials are also sometimes responsible for imparting an off-flavor to foods. Stored, cooked foods may take on off-flavors from the equipment or from other foods in the freezer, if the cooked product has not been carefully wrapped and completely sealed.

BAKED OR UNBAKED FOR FREEZING

When the subject of baked frozen foods is under discussion the question most often asked is; "Which is better—the frozen baked product or the frozen unbaked product?"

Actually, either way is entirely satisfactory and there are points in favor of both procedures. When frozen unbaked pies are baked, the crust seems to be better browned and the crust is crumblier. Not flakier, mind you, but crumblier—more fragile. Pies which are frozen unbaked need no thawing before they are put into the oven to bake. On the other hand, bulk doughs which have not been shaped prior to freezing do have to be thawed, and it takes considerable time for frozen doughs to thaw.

Storage tests indicate that the baked and frozen products remain in better condition for longer periods of storage. For instance, it is not recommended that an unbaked pie be stored in the freezer for longer than 6 to 8 weeks; while a pie baked before being frozen can be stored for 4 to 6 months. However,

it is probable that you would want to draw upon your supply of frozen baked goods regularly, just as you do other frozen foods, and from 6 to 8 weeks may suit your convenience, except in those instances where a winter's supply of fresh berry or fruit pies is made when the fresh fruit is in season. Then, to get the best results, it is wise to freeze the baked pies.

When fruit pies are frozen unbaked, prepare the filling before putting it in the pastry using quick tapioca, corn starch, or flour as the thickening. This will insure against your frozen unbaked pies having soggy bottom crusts.

Rolls frozen as dough have a great deal of appeal because they save time in preparation and yet have the tantalizing odor of freshly baked bread at serving time. They may also use less fuel than rolls that are baked, frozen, and reheated. But frozen doughs often fail, the products are sometimes small in volume and have dry, tough crusts. Common causes of these failures are: the yeast has become inactivated by too long freezer-storage, the dough may have been poor to begin with or there was too little yeast in the original recipe, too much time between preparation and storage in the freezer, poor packaging, or too high a storage temperature.

Partially baking rolls at 275° F. for about 20 minutes may often solve many of these problems. The rolls, when baked at this temperature and time, will be pale and not browned, but they should be baked in the center. Half-baked rolls may be frozen and kept successfully at 0° F.

Partially-baked rolls should be thawed in the unopened original package for 10 to 15 minutes. Place on baking sheet; if the surface of the rolls seems dry, they may be greased lightly before baking at 450° F. for 5 to 10 minutes until delicately browned. Should the under crust of the rolls be too moist, then bake them on a cooling rack instead of a baking sheet.

Baked yeast rolls and bread keep successfully in freezer storage, and thaw quickly because they contain little moisture.

PACKAGING SUGGESTIONS

BREAD

Baked: After loaves are thoroughly cooled, wrap each loaf in moistureproof sheeting, heat-sealing overlapping edges.

Unbaked Loaves: After dough has raised once, knead down, shape loaves; wrap individually in moistureproof Cellophane and pack in folding waxed carton of suitable size; label and overwrap carton with moistureproof sheeting and heat-seal, and freeze in greased pan in which loaves are to be baked. Wrap pans in moistureproof Cellophane and heat-seal.

Unbaked Bulk: After dough has raised once, knead down, pack in folding waxed cartons lined with moistureproof Cellophane; overwrap carton, label and heat-seal.

ROLLS

Baked: Turn raised pan rolls out of pan after baking to cool thoroughly before packaging; wrap in moistureproof Cellophane, and heat-seal.

If individual dinner rolls such as cloverleaf rolls are frozen, allow them to cool, then pack them in folding waxed carton, label, then over-wrap carton with moistureproof Cellophane and heat-seal. Baked dinner rolls may also be packaged in a large moistureproof Cellophane bag, which is then heat-sealed.

Unbaked: After dough has raised once, knead down, shape and fill baking pan; wrap pan in moistureproof Cellophane and heat-seal. If cloverleaf rolls are desired, they may be shaped and placed in paper baking cups for storage; the cups are packed in folding waxed cartons which are labeled and over-wrapped with moistureproof Cellophane and heat-sealed.

Unbaked bulk rolls may be packaged the same as unbaked bulk bread dough.

MUFFINS

Baked: Pack in folding waxed carton, label, and over-wrap with moistureproof Cellophane, and heat-seal; or package in a moistureproof Cellophane bag the same as dinner rolls.

Unbaked: Batter may be poured into any moistureproof con-

tainer such as is used for freezing fruits of a size best suited to the quantity of batter.

CAKES

Baked: If the standard 8- or 9-inch layer pan is used, a single layer will fit into a small-size pastry folding box. First wrap cake in moistureproof Cellophane; place in folding carton; label carton and over-wrap with moistureproof Cellophane, then heat-seal.

Angel and sponge cakes are wrapped in moistureproof Cellophane after thorough cooling and the Cellophane heat-sealed. If no protective carton can be found suitable to the size of the cake, a paperboard "collar" fitted around the sides and cut-out paperboard "rounds" for top and bottom will give some protection against abuse in the freezer; or the cake may be frozen in the pan in which it was baked.

Unbaked: Batter may be poured into any moisture-vapor-proof container such as is used for freezing fruits, of a size best suited to the quantity; or, it may be poured into the greased cake pans in which the cakes are to be baked, then frozen, and then wrapped in moistureproof Cellophane and heat-sealed.

CUP CAKES

Baked: Pack in folding waxed carton, label carton, and over-wrap with moistureproof Cellophane, heat-seal.

Unbaked: Batter may be poured into paper baking cups in muffin pan; when frozen, remove paper cups, pack in folding waxed carton, label carton, over-wrap with moistureproof Cellophane, and heat-seal.

If bulk batter is frozen, pour into containers the same as cake batter.

COOKIES

Baked: Pack in folding waxed cartons, the same as cup cakes.

Unbaked: Bulk dough may be packaged the same as bulk bread dough. If the dough is the refrigerator type which can be rolled and sliced, the rolls may be shaped, then wrapped in moistureproof Cellophane, packed in folding waxed cartons, labeled, over-wrapped with moistureproof Cellophane, and heat-sealed.

PIES

Baked: After baking and cooling, slip the pie into a paper pie plate, and for top protection invert a paper pie plate over the pie, then wrap in moistureproof Cellophane and slip into stockinette (the same as a roast), tie securely, and label.

Unbaked: Paper "Bake-a-Pie" and also aluminum foil plates are available for this purpose in which the pie is made and also baked after storage. Place the unbaked pie in folding waxed cartons of suitable size, label cartons, and over-wrap with moistureproof Cellophane, then heat-seal package.

STEWS, A LA KING DISHES, SPAGHETTI, ETC.

Pack into cup- or tub-shaped containers, or cubical containers such as are used for freezing fruits.

COOKED STEAKS, CHOPS

Package same as fresh product. Or wrap in laminated foil, then heat-seal.

CASSEROLES

Wrap in moistureproof Cellophane, slip into stockinette, tie securely and label.

SALADS

Waxed tubular containers with a friction top make it easy to peel away the carton from the frozen cottage cheese type of salad. To make individual servings, use the same type of carton but place two pieces of Cellophane between each layer. Freeze salads inside the grids of the ice tray, remove as ice cubes, wrap each cube in Cellophane and pack in a carton. Individual servings in waxed paper cups are handled the same way. To serve, thaw only slightly in the refrigerator.

SANDWICHES

Wrap each sandwich in moistureproof Cellophane and heat-seal. Place in box to prevent crushing during freezer storage. Canapes

and tea sandwiches are packed in rectangular boxes with pieces of waxed paper between the layers. Do not make too many layers, as the weight of the upper ones may mash those on the bottom layer.

SOUPS

Place concentrated soups or purées for soups in sturdy packages; or pour the soup between the grids of ice cube tray. Wrap cubes of soup in heat-sealing Cellophane and place them in cartons. Over-wrap with heavy waxed paper or Cellophane.

POTATOES

Candied Sweets, French Fried, Cottage Fried, Chips, or Baked Stuffed: Pack in folding waxed carton lined with moistureproof Cellophane, label carton, over-wrap with moistureproof Cellophane, and heat-seal. Or these products may be packaged in laminated foil bags, then heat-sealed.

LENGTH OF STORAGE

During storage, emulsions have a tendency to break down or curdle; in the same manner gravies sometimes separate and deteriorate during storage.

After long storage, some shellfish products such as lobster become tough and rubbery. This is explained by the fact that the proteins in these foods become denatured. However, such changes are not noticeable during short storage periods.

If pork is added to a prepared dish, such as pork and beans, the cooked food cannot be stored long, for the fat in the pork will turn rancid and give an undesirable change in flavor to the cooked product.

Freezing does not kill yeast in unbaked doughs, although over a long period of storage it may weaken it.

Following are the recommended periods of storage for various prepared foods:

Bread, Rolls (Baked)	12	months
(Unbaked)	1	"
Muffins (Baked)	6	"
(Unbaked)	2	weeks
Butter Cakes, Cupcakes (Baked)	6	months
(Unbaked)	2	weeks
Angel, Sponge Cakes	6	months
Cookies (Baked)	6	"
(Unbaked)	3	"
Fruit Pies (Baked)	6	"
(Unbaked)	2	"
Cream Pies (Baked)	6	"
(Unbaked)	2	"
Meat Pies (Baked)	6	"
Stews, etc.	6	"
Pork and Beans	6	"
Salads	2	"
Sandwiches	2	weeks
Soups	6	months
Lobster, Cooked Shrimp, Crabmeat	1	"
French, Cottage Fried Potatoes	3	"
Potato Chips	6	"
Cooked Steaks, Chops	6	"

HELPFUL EXTRA HINTS

For those on a salt- or sugar-free diet, special foods may be prepared using sugar and salt substitutes recommended by the attending physician.

Coffee stored in its own container, yes—in the freezer, will keep its flavor better and longer.

Freeze extra ice cubes several days before your party. Remove from trays and place in heavy parchment bags, store in freezer.

Ground spices which often become stale or rancid when kept in warm cupboards retain their quality in the freezer. Be sure they are top quality before you store them.

Fruit juices or purées prepared and freezer-stored in the

heat of summer are wonderful for making jellies and jams in the coolness of fall and winter.

Store purchased baker's goods in their own wrappers (if they are unbroken) if you intend to use them within a few days.

Salted nuts, caramel corn, and potato chips keep their flavor and crispness when stored in the home freezer.

Left-over foods from the table can be placed in air-tight containers and stored in the freezer for as long as four weeks without deterioration.

MENU PLANNING AND RECIPES

When you plan complete meals to be precooked and frozen it is vital to select menus that possess a variety of colors, shapes, flavors, and textures, to give the meal that important eye and taste appeal.

All foods used in the preparation must be of excellent quality.

Remember that each of the foods to be served must be ready for the table—all at the same time. The foods you select must have about the same reheating time. The size and shape of the servings will make a difference in the time for reheating the food.

Use the same precautions as you do for freezing any food. Foods should be packed solidly to keep out air; cleanliness in preparation and packaging is basic to quality. Hot foods must be chilled quickly; all foods must be packaged carefully and quickly; freezing must be speedily completed and precooked foods should be reheated quickly.

Foods to be served as a meal must be safely stored for the same length of time; where one food is more perishable than the others, be sure to serve the meal within the storage life of that particular product.

Experimenting on your own is the only *real* way to determine just what recipes will best serve your family tastes and needs, with cooked frozen foods. There are several cook books avail-

able giving many suggestions and ideas on freezing cooked foods. Once again we recommend the free booklets on freezing made available to you through many State Experiment Stations.

Read each recipe carefully, assemble all ingredients, and your cooking equipment, before starting to prepare the product. Yes, your freezer will let you cook to your heart's content and many of grandma's favorite recipes will return in all their forgotten glory when you bring them out of the freezer to grace the family dinner table once again.

The "New" and the "Old"—the "Hot" and the "Cold"—combine to make those Gourmet Meals from the freezer.

CHAPTER IX

Out of the Freezer for Your Eating Pleasure

The home freezer bulging with good food gives a sense of well-being and joyous satisfaction to the entire household. This deep inner pleasure is inescapable, as all families having freezing facilities will discover, for no two things give us as much a sense of security as a steady income and food in the house—plenty of it.

Frozen foods in the freezer are appreciated by the homemaker for a good many reasons: they represent so many packages of ready-to-cook foods which take an absolute minimum of effort and preparation to be ready to serve at mealtime. Tedious as meal preparation sometimes is, and busy as all homemakers are, the preparing of meals is one of those most important home functions which is very apt to be neglected. Not willingly, of course, but because of the time involved. Take spinach, for instance: 15 or 20 minutes can easily be spent in washing greens and picking over leaves. If more than one fresh vegetable is to be served, preparation for dinner must be started early. With frozen foods in the freezer, it is quick and simple to serve any or as many vegetables as you wish to make the meal a good one.

While thawing of frozen foods takes time, it doesn't involve *any of your time* . . . just the thought beforehand about what foods you wish to serve from the freezer, and putting them out in the place where they will thaw. The most obvious place for this is, of course, out on your kitchen work table where

they will thaw in a few hours at room temperature. But an electric fan, and the oven of your range, can also be utilized to hasten the thawing of those foods which need to be thawed before being cooked. So even the thawing of frozen foods can be made to work to your convenience.

What foods need to be completely thawed before cooking? How is it best to thaw them? How should they be cooked so as to conserve all the goodness freezing preservation has kept there? Here are the answers to all these questions:

VEGETABLE THAWING AND COOKERY

When frozen vegetables are to be thawed before cooking, remember to *always thaw ALL frozen foods in the sealed package!* Prepare them for the table as soon after thawing as possible, for they will show greater shrinkage and will not put in an appearance at the table in their most attractive form if they stand too long.

The secret of good vegetable cookery is to cook them as quickly as possible. Any procedure that will hasten the cooking of your frozen vegetables is good procedure; to hasten the cooking process, you may break up the frozen pack before placing it in the cooking vessel by hitting the package sharply against the edge of a table or work surface.

Corn on the cob is the *only* vegetable which should be completely thawed before being cooked. If it is cooked for the recommended length of time while still in the frozen condition, the cob will still be icy when served; and if cooked until the cob is thoroughly heated through, the kernels will be overcooked and much of the fine flavor will be lost.

Spinach and other greens, as well as beets, pumpkin, and squash, are better if they are partially thawed before being cooked. More uniform cooking results, since these vegetables require very short cooking periods. *All other vegetables are best cooked without thawing.*

It may be impossible to cook brine pack vegetables while still frozen because they may have to be completely thawed in order to remove the vegetables from the package. In cooking brine pack vegetables, *always* use the brine in which they are packed as the liquid for cooking, add more salt if so desired, but do not add more water unless the vegetables cook dry. *Serve the liquid with the cooked vegetable,* otherwise the water-soluble nutrients (Chapter V) will be lost if not utilized in some manner. As previously stated, this is one of the reasons why brine pack for vegetables is not so highly recommended.

If sufficient frozen storage facilities are not to be had at home, you may wish to limit the trips to the locker plant by bringing several packages of vegetables home at one time. Vegetables can be kept in the ice-cube compartment of your refrigerator at home from 5 to 7 days without undue harm to their quality. But do not allow frozen packages to thaw unless they are to be used at the next meal, because spoilage sets in rather rapidly after the vegetables have completely thawed. Neither should completely thawed frozen vegetables be refrozen (for detailed information refer to pages 25–27).

To Boil—Vegetables are blanched during their preparation for freezing; in a measure they may be termed partially precooked foods and as such need less cooking than do fresh vegetables. The time required to cook frozen vegetables is often only half to two-thirds as long as fresh; in the case of such vegetables as beets and squash, which are completely cooked before freezing, these are heated to serving temperature.

Habits of long standing are persistent and hard to break; and one of these is the habit of cooking any vegetable, whether frozen or fresh, for such a long time that the "life" is cooked out of it. The longer you cook vegetables the less color, flavor, and nutrients remain in the vegetable. The most important thing to know about cooking frozen vegetables is to cook them for

the shortest possible time and only until the vegetable is tender. Time your cooking so the vegetables can be served immediately; nutrients are lost if they are allowed to stand for any length of time before they are eaten.

A new cooking habit you will be happy to acquire is the use of *Ac'cent* (monosodium glutamate) when cooking vegetables. You will find that glutamate enhances the sweet, rounded flavor of frozen vegetables and really improves their color. Some folks think that this flavor-enhancer seems to make frozen vegetables even more tender. Add just a small amount (pinch) to your cooking water, then taste the difference!

In cooking frozen vegetables, use the smallest amount of water possible without scorching or burning, so that when the vegetable is done the small amount of remaining liquid may be spooned up with the vegetable servings. Usually from 1/4 to 1/2 cup of water is sufficient for cooking most vegetables. In the case of home-frozen greens, enough water clings to the leaves for cooking purposes so that no additional water need be added; but in using some commercial brands of spinach and other greens, it may be advisable to use as much as 1/4 cup of water per pint package.

Have the water boiling—a fast, rolling boil—before the vegetable is added; then bring the water back to boiling again as quickly as possible; after water comes to a full rolling boil with the vegetables added, reduce heat and let the water boil gently the rest of the cooking period. Just after the vegetables start steaming briskly, break up any frozen portions of the pack with a fork. Count the actual cooking time from the time the vegetables are completely thawed in the cooking vessel and the water starts to boil after they have been added. Seasonings may be added at any time during the cooking period.

To give you an idea of the shorter cooking time required for frozen vegetables, here is a cooking time chart which may be used as a guide for all the more common vegetables:

VEGETABLE COOKING TIME CHART*

Asparagus (cuts and tips)	5– 8 min.	Corn, kernel	3– 4 min.
Asparagus spears	8–10 min.	Corn, on cob	3– 4 min.
Beans, green	12–15 min.	Kale	20–25 min.
Beans, lima, Fordhook variety	12–16 min.	Kohlrabi	8–10 min.
Beans, lima, Henderson Bush variety	16–20 min.	Mushrooms (Sauté—do not cook in water)	10–15 min.
Beans, wax	12–15 min.	Mustard greens	12–15 min.
Beets, whole	18–20 min.	Peas	6– 8 min.
Beets, cubed or sliced	Heat to serving temperature	Rhubarb	10–12 min.
Beet greens	10–12 min.	Spinach	4– 6 min.
Broccoli	5– 7 min.	Squash, summer	10–12 min.
Brussel sprouts	3– 4 min.	Squash, winter	Heat to serving temperature
Carrots	5–10 min.	Swiss chard	8–10 min.
Cauliflower	5– 8 min.	Turnips	12–15 min.
		Turnip greens	15–20 min.

* Cooking times for vegetables are merely a guide, as they will vary according to the variety of the vegetable, the maturity, size of pieces, etc.

Frozen vegetables may also be cooked in a pressure saucepan. For best results, defrost frozen vegetables in the package at room temperature for 1 hour, or until the vegetables may be separated. (Allow a longer defrosting time of from $1^1/_2$ to 2 hours for corn on the cob). Break the vegetables apart with a fork and put them in a pressure saucepan, then follow the manufacturer's directions carefully. Frozen vegetables cook so quickly by the usual methods that there is little to be gained by cooking them under pressure. Every precaution must be taken to prevent overcooking when using a pressure saucepan.

Boiling is not the only way to prepare frozen vegetables—a fact often overlooked by the busy homemaker; try them oven cooked, pan fried, deep-fat fried, and prepared in any number of delicious, tempting dishes. The following suggestions are offered for cooking frozen vegetables:

Oven Cooking—Frozen corn on the cob is delicious when roasted for about 20 minutes in an oven at 400° F. After thawing, the ears are brushed with melted butter and roasted until

done and slightly browned. The heat of the oven dries the corn so that it is less water-soaked than when cooked by other methods. Asparagus, peas, and many other vegetables may be placed in a buttered casserole with butter and seasonings added, and the covered casserole placed in a 350°–375° F. oven. Asparagus requires about 30 minutes to bake; peas, 14 minutes.

Pan Frying—For pan frying, the frozen vegetable is added to about 2 tablespoons of melted fat in a heavy frying pan. Salt is then added, the pan covered, and the vegetable cooked over moderate heat until done. At about 2-minute intervals, the cover should be lifted and the vegetable stirred. Corn and cut-up asparagus are particularly good cooked this way.

Deep-Fat Frying: Corn on the cob is excellent when fried in deep fat. Cauliflower and asparagus are also delicious when dipped in a thin batter and fried in deep fat. The vegetables should first be boiled or steamed.

Other Cooking Suggestions: Cooked frozen vegetables, like cooked fresh vegetables, may be served as creamed vegetables, souffles, fritters, timbales, casserole dishes, chop sueys, and salads. The directions for using the cooked frozen vegetable in these dishes are the same as for using the corresponding cooked fresh vegetables.

Don't be afraid to experiment with frozen vegetables. Here are a few home-tested recipes to give you some suggestions.

Economy Vegetable Soup

The flavor secret of this recipe is to fry until golden brown:

1 package of defrosted mixed vegetables in
4 tablespoons butter or margarine
1 diced raw sweet potato
1 medium onion, chopped
A sprig of parsley (from the freezer) chopped fine.

Turn ingredients into soup kettle, add 1 1/2 quarts of cold water, 2 cups of cooked tomatoes, 4 tablespoons rice, 1 bay leaf, salt and pepper to taste. Simmer 1/2 hour. Add one thinly sliced white potato—cook 10 to 15 minutes longer. Remove bay leaf and serve. Yield: about 2 quarts.

Glazed Carrots

Defrost completely 1 pint sliced carrots, drain off any moisture, then combine in heavy skillet with 2 tablespoons of butter or margarine and 4 tablespoons of sugar (granulated or brown). Stir constantly over low heat for 2 to 3 minutes.

Vegetable Combinations

Green string beans with sautéed mushrooms.

Cook frozen asparagus—serve on toast—garnish with melted butter and grated parmesan cheese—good luncheon dish.

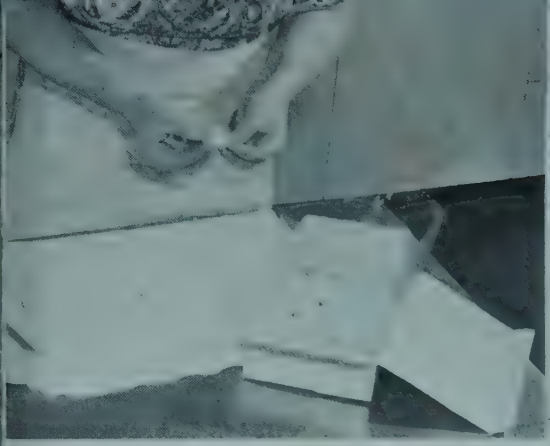
Frozen Broccoli Meringue: Combine 1 stiffly beaten egg white with 1/2 cup of your favorite mayonnaise (not salad dressing). Spread lightly on top of 1 package of cooked broccoli. Place under broiler 3 inches from heat, until meringue is lightly browned. Serve at once.

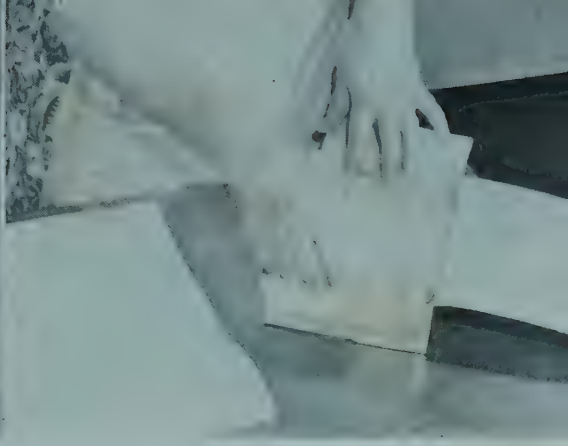
Sweet Potato: To serve 6. Place frozen sweet potato halves in a shallow baking dish. Combine 1/4 cup frozen orange juice (do not dilute), 1/2 cup sugar, 1/4 teaspoon salt and 1/2 cup of frozen whole cranberries in a saucepan and bring to a boil. Pour over potatoes, bake at 375° F. for 30 minutes. Baste occasionally.

Frozen Tomato Juice: Substitute for water when making meat stews. In your biscuit recipe replace milk with frozen tomato juice to get delicate pink, fluffy biscuits for a party surprise. Combine equal parts of tomato juice and clam juice—add a dash of lemon juice, season to taste. Serve hot, topped with sour cream—wonderful.

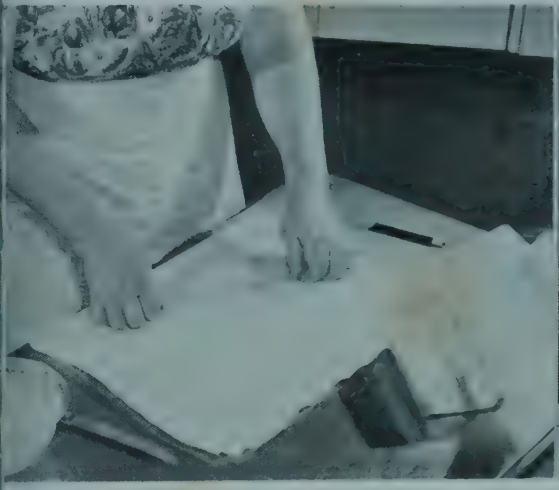
SERVING AND USING FROZEN FRUITS

Dessert Serving—All fruits darken and lose flavor rapidly once they are thawed and removed from the package. After

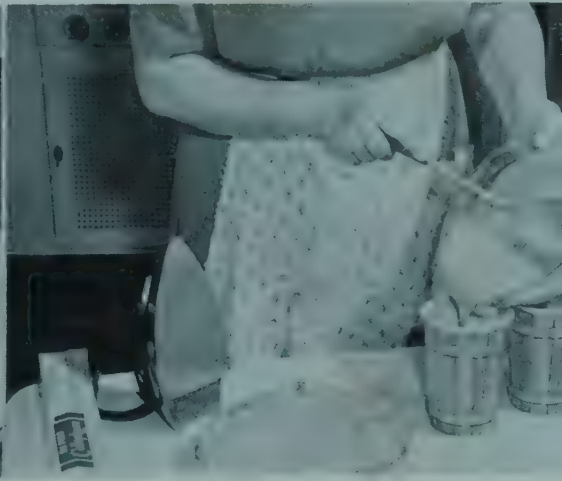




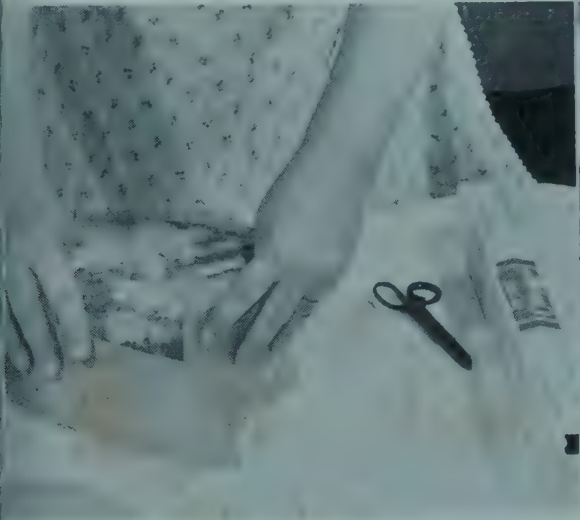
Unbaked yeast dough may be shaped, greased and packed in Cellophane-lined carton for freezing.



/rapping rolled cookie dough in Cellophane.

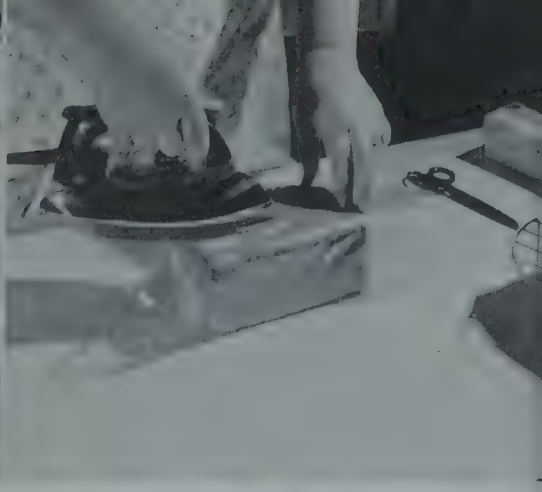


Freeze cake batter in greased pan or carton.



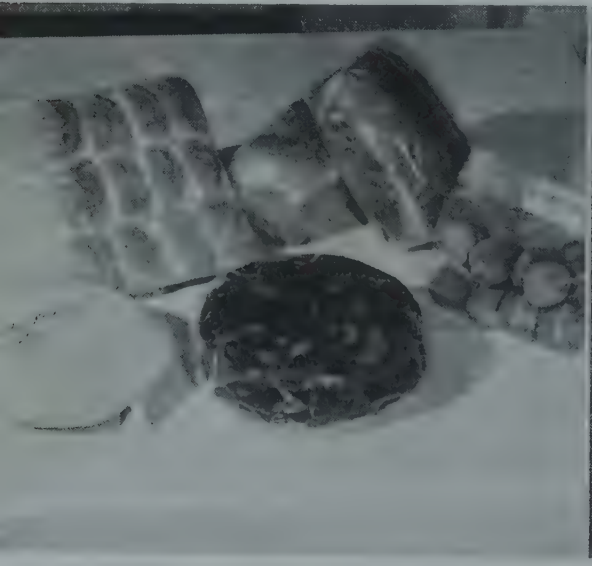
e-made paper "collar" helps protect angel food. Seal in with wrap of moistureproof Cellophane, heat-seal.

Wrapping pie in aluminum foil. (*Photo courtesy Reynolds Metals Co.*)



Let bread cool, then wrap in Cellophane; heat

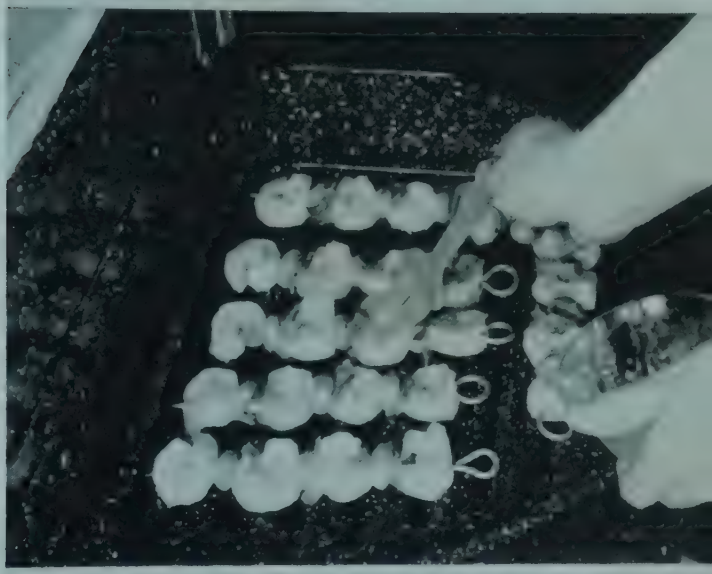
Another method of wrapping a pie is to place paper plate over baked pie for protection. Then wrap moistureproof Cellophane; heat-seal.



Home-baked goods ready for the freezer.

Peach shortcake prepared from frozen peache

Frozen uncooked shrimp, cleaned and combined with mushrooms and bacon on skewers.



Kabobs placed on broiler tray and brushed with seasoned butter. (See recipe, p. 196)

Pretty to look at, better to eat—these easy-to-fix Shrimp Kabobs will grace your table. (*Photos courtesy of U.S. Fish and Wildlife Service*)

Rice may be cooked and used to stuff peppers or acorn squash (top), or combined with meats or chicken livers (bottom). Be careful not to overcook rice, macaroni, or spaghetti products for freezing.

removal from storage 1-pound (pint) packages may be thawed one of several ways: on the lower shelf of your refrigerator, which takes from 5 or 6 hours to about 10 hours (the shorter thawing time for partial thawing); at ordinary room temperature on the work table, which takes from 3 to 4 hours; at ordinary room temperature with the package placed before an electric fan, which takes only about 1 hour; water-tight packages may be placed in a pan of cool water or under running cold water, which takes about 40 to 45 minutes; or water-tight packages may be thawed under running lukewarm water for about 5 minutes, then transferred to cold running water and a package will thaw in about 30 minutes. Larger size family packages will, of course, take longer to thaw. It is advised *never* to thaw fruits by immersing the package in hot water. For best results please *always* remember to thaw fruits in the unopened package.

When serving fruits as dessert, let them make a stage entrance to the table by allowing none of their goodness or beauty to slip away before they are eaten. To do this, open package only when you are ready to serve them; and serve while there are still a few ice crystals glistening in the fruit. Use as toppings for puddings or ice cream, or serve in sherbet glasses topped with sweetened whipped cream. Combine several of your favorite fruits for an original fruit cup.

Cooking with Frozen Fruits: Frozen fruits may be used in your favorite recipe instead of fresh fruits, the only precaution is to allow for the sugar or syrup added before freezing.

For muffins or pancakes it is best to use sugar pack fruits or dry pack, such as blueberries. Defrost only enough to separate, then add directly to the flour mixture before adding liquid.

Mouth-watering upside-down cakes are made from partially thawed fruit. Arrange fruit in baking dish (apple slices, peaches, cherries, blueberries are especially fine) then top with batter made from your favorite home recipe or prepared mix.

Sugar- or syrup-pack fruits may be partially thawed for placing between layers of the old-fashioned biscuit-type short-cake or between feather-light cake layers if preferred. Short-cake is how you like it—but with frozen fruit it is hard to beat.

To fill 6 to 8 fruit tarts or one 9-inch pie shell, you will need 1 quart of sugar-packed fruit. Defrost only enough to separate the fruit. If 1 part of sugar was used to 4 parts of fruit for freezing, no additional sugar is needed. When unsweetened frozen fruits are used, follow the amount of sugar called for in the recipe.

When using syrup packs, drain off syrup, then add back 1/3 cup of syrup to 1 quart of fruit for 1 fruit pie; this amount will also make 6 to 8 tarts or fruit cobblers. Reserve rest of fruit syrup to use in fruit punch, cocktails, or fruit compotes. The left over juice may be thickened and served hot over rice pudding or slices of un-iced cake.

Slightly more thickening may be needed for pies with frozen fruits that develop too much juice while thawing, or some of the extra juice may be drained from the fruit before using.

For jellies, jams, and preserves follow a reliable recipe. Additional sugar will be needed to make the total amount equal to that called for in a recipe using fresh fruit.

Frozen fruits may be cooked in the same manner as the fresh product; sugar-pack fruits require less sugar. Fruits may also be cooked and frozen, then served cold with ice crystals remaining, or they may be heat-thawed to serve warm, since there will be no apparent texture changes.

Fruit juices and blends of fruit juices with traces of ice crystals still apparent make wonderful before-meal appetizers or cocktails. No additional water is needed. For a refreshing fruitade, combine equal parts of fruit juices and chilled ginger ale or soda water—garnish with orange, lemon, or lime slices, or a sprig of mint.

Here are three tested recipes you will want to use over and

over again—try your own hand with sugar and spice and frozen fruits:

Quick 'n' Easy Jam

3 cups of your favorite frozen fruit (defrosted)
$2^1/_2$ cups sugar
2 teaspoons lemon juice
$^1/_3$ cup water
4 tablespoons ($^1/_4$ cup) fruit pectin

Mix pectin with $^1/_2$ cup of the sugar. Combine this mixture with the defrosted fruit and water in large saucepan stirring well. Bring to a fast boil over high heat. Add remaining sugar at once and bring to a full rolling boil. Boil hard 1 minute, stirring constantly. Remove from heat and with a metal spoon skim off foam. To prevent fruit from floating and to cool, alternately stir and skim for 5 minutes. Ladle quickly into sterile jelly glasses. Immediately cover jam with $^1/_8$ inch hot paraffin. Yield: about 5 six-ounce jars.

Minted Strawberry Bowl

2 cups partially thawed strawberries
1 cup heavy cream
$^1/_4$ cup crushed fondant mints
Green vegetable coloring

Whip cream to the consistency of custard; fold in crushed mints. Tint a delicate green. Freeze. To serve, arrange partially thawed strawberries in serving dish. Pile frozen whipped cream in center. Garnish with additional berries. Serves 4.

Puréed Fruit Soufflé

1 cup of puréed fruit
4 egg whites
$^1/_8$ teaspoon salt
$^1/_4$ teaspoon cream of tartar

Whip egg whites, salt, and cream of tartar until stiff. Fold in 1 cup of puréed fruit. Place in buttered 9-inch baking dish. Set dish in pan of hot water. Bake for 20 minutes at 350° F. Serve with cream or fruit sauce.

FROZEN MEAT COOKERY

The cooking of frozen meats does not present the problem that thawing of them does, because when meats are completely thawed, they are cooked and treated just like fresh meats, with one exception—thawed meats should not be held for any great length of time before cooking.

Like all other frozen products, meat should be thawed with the original packaging intact; it is poor practice to allow meat to stand exposed to the air.

It takes time to thaw meats, especially the heavier pieces. Standing at room temperature, it will take about 2 hours per pound to thaw meat—5 hours per pound if placed on a shelf of the refrigerator. However, thawing can be speeded up by using an electric fan or a warm oven (200° to 250° F.). If the frozen meat is placed in front of an electric fan at room temperature, thawing time can be cut to only 45 minutes per pound. If it is placed in a warm oven it takes but 25 minutes per pound to thaw.

There is a greater amount of drip from meats which are thawed rapidly. Whenever possible, plan to use your frozen meats far enough in advance to allow for slower thawing. A convenient way to thaw a roast slowly is to place it on the lower shelf of the refrigerator the night before you plan to serve it. A 3 or 4 pound roast, or smaller, will thaw sufficiently to cook the next day. Remove a larger roast from the refrigerator several hours before cooking time, to allow complete thawing at room temperature.

It is generally recommended that thawed or almost thawed meats be used for roasting, since a more uniform doneness can be obtained. When roasts are cooked in the solidly frozen state, it not only takes a very long time to cook the roast, but when the outside is nicely browned, the inside is likely to be raw and cold because heat penetrates slowly. Thin steaks and chops may be cooked without being thawed, but steaks which

are $1^1/_2$ inches or over in thickness should at least be partially thawed before cooking. It is also better that ground meats and the variety meats (liver, etc.) be completely thawed before cooking.

If meat is cooked without being completely thawed, additional cooking time must be allowed and the temperature should be lower than when cooking the corresponding fresh or completely thawed meats, to permit a gradual heating and complete defrosting during the cooking period. Use a recommended meat cooking chart for accurate times and temperatures for cooking completely thawed meats; add from 12 to 20 minutes more per pound to the time given, for roasting meats which are still frozen; add from 13 to 23 extra minutes per pound for broiling thick frozen steaks.

There is only one way to eliminate the guesswork when cooking any meat in order to get it rare, medium, or well done—a meat thermometer. Since it is almost physically impossible to insert a meat thermometer deep into the center of a piece of frozen meat, we suggest inserting the thermometer when the meat is about half cooked, when it has thawed sufficiently to easily insert the thermometer. Then, if any difficulty is experienced with getting the thermometer into place, make a hole with a metal skewer (or some similar metal object) into which the stem of the thermometer can be inserted. Take care not to break the thermometer while attempting to insert it.

Before passing on to the thawing and cooking of other frozen products, perhaps you would like to review the latest methods of meat cookery which give the best flavors, less meat shrinkage, and the best looking dishes.

Roasting—A roast at least 5 inches thick is best. Rub surfaces with salt, or salt and flour if desired. Place fat side up in an open shallow pan, on a rack or trivet, if it is boneless, and roast uncovered. Lean roasts may be larded or pieces of suet may be placed on top. *Add no water and cook at a constant moder-*

ate temperature. It is not necessary to first sear the meat, although this may be done if preferred. The oven temperature for beef and lamb should be 300° F. and for pork 350° F. Keep the oven temperature constantly at these levels throughout the roasting period because (1) it gets uniformly done; (2) bones and fat are not charred; (3) there is less shrinkage, resulting in a plump, full roast; (4) the meat is more flavorful and juicy; (5) it requires less watching by the cook; (6) the oven does not get grease spattered. Roasting in this way does not require basting; if the fat side of the roast is up, or if it is larded or topped with suet, the roast will be self-basting. The time for cooking a roast cannot actually be given in hours and minutes because cuts will vary in weight, shape and composition; and the temperature of the meat when it is placed in the oven also affects the length of time necessary for roasting. As mentioned previously, a meat thermometer is the only sure way to arrive at the degree of doneness required. Thermometer readings for degree of doneness are as follows: Beef, rare—140° F.; beef, medium-rare—160° F.; beef, well-done—170° F.; lamb, medium—175° F.; lamb, well-done—180° F.; pork, which should always be cooked to the well-done stage—185° F.

Oven Broiling—Prepare the broiler by rubbing it with fat and preheating it for 10 minutes at 350° F. Slash edges of fat several places around pieces to prevent curling during cooking. Rack is placed in broiling position so that top of meat is 3 inches from the source of heat for 2-inch steaks or chops, or 2 inches for 1-inch thicknesses. To determine degree of doneness desired, a meat thermometer may be inserted horizontally into the center of the largest muscle of one of the pieces. As the meat is nicely browned on one side, or the thermometer registers 100° F. for rare beef, or 135° F. for medium beef and for lamb, seasonings are added to the steaks or chops, and they are turned to finish cooking on the other side. You will find that well-done steaks are never as juicy as the medium or rare ones.

Pork and veal usually require a longer, more moist method of cooking to make them tender, so these meats are not often broiled.

Pan Broiling—Where no oven broiler is available, this is a good method of dry-heat broiling. Do not add any fat to the skillet, although you may wish to rub it with the fat edge of the meat or a piece of suet before the meat is laid in the skillet. Pour out the melted fat as it accumulates during cooking, leaving just enough to prevent the meat from sticking. Brown meat on one side, then turn and brown on the other side; brown the meat on both sides at a high temperature. After browning, reduce temperature and cook until the desired degree of doneness is reached, but do not cover while cooking. This method is considered old-fashioned by some, but when properly used it develops the natural flavor of chops and steaks.

Braising—This is the moist-heat method most often used for less tender cuts of meat with liquid added. The meat is browned on both sides first, either in its own fat or a small amount of fat added; then water, tomato juice, meat stock, vegetable cooking water, milk, sweet or sour cream, diluted vinegar, cider, or fruit juices are added; a tight-fitting cover is placed over the vessel and the meat is simmered until done. In some cases, the meat may be cooked in its own juices with no liquid added; when liquid is added, only enough should be used to keep the meat from burning. After browning the meat, the cooking temperature should never be above a low temperature for simmering.

Stewing—There are two types of stew; brown stew and light stew. To obtain the brown stew, meat is browned before water is added in which the meat is slowly simmered until done. For light stew, the meat is not browned, but water just to cover the meat is added at the start. Add seasonings when the meat is put on to cook; but add vegetables just long enough before serving time to insure their being cooked done.

Rolled Round Steak

2 pounds of defrosted round steak
1 cup bread crumbs
1/3 cup melted margarine or butter
1/4 cup raisins
1/4 cup chopped walnuts
Boiling water or tomato juice to bind only
Season to taste

Spread steak with dressing made of all the above ingredients. Roll steak like a jelly roll. Wrap 5 or 6 bacon strips around steak and tie at intervals with cord. Dredge lightly in seasoned flour. Brown in hot oven —475° F., then reduce heat to 375° F. Cover and bake 45 minutes. Uncover and cook until tender. Slice and serve with sauce or gravy. Serves 4.

Pork Chop Lima Bean Curry

4 end pork chops, defrosted completely
1 medium onion, sliced
1 sliced carrot
1/2 cup water
2 teaspoons curry powder
1 teaspoon salt
1 pint lima beans (thaw to separate only)

Brown defrosted chops on both sides in hot skillet without added fat. Add onion, carrot, water, curry powder, and salt. Cover and simmer over low heat for 20 minutes. Add frozen lima beans, cover and simmer for 20 more minutes. Serves 4.

Lamb and Green Bean Casserole

1 pound of defrosted stewing lamb, cubed
2 tablespoons butter or margarine
1/2 cup chopped onions
2 cups boiling water

Brown meat and onions in fat. Add boiling water, cover and simmer over low heat until nearly tender. Combine in a shallow casserole with:

1 package defrosted French style green beans
1 cup stewed tomatoes

Thicken gravy with 3 tablespoons of flour. Season to taste and pour over meat and vegetables. Top with bread crumbs. Dot with butter. Bake 30 minutes in 375° F. oven. Serves 4.

Kidney Ragout

6 veal or 9 lamb kidneys, completely defrosted
3 tablespoons flour
3 tablespoons melted butter
1 1/2 cups stock (from freezer)
Salt and pepper to taste
1 1/2 tablespoons lemon juice (from freezer)
1 1/2 teaspoons horseradish
1/4 cup currant jelly

Split kidneys, remove skin and fat. Soak in cold salted water 30 minutes. Drain and slice very thin. Stir flour into melted butter, brown slightly, then add stock slowly and cook until thickened. Add kidneys, season to taste, and cook 10 minutes, or until tender. Beat jelly, add with horseradish and lemon juice to kidneys. Serve at once over cooked rice or on toast. Yield: Serves 6.

POULTRY, FISH, AND SHELLFISH

Poultry—It is recommended that poultry be completely thawed before cooking, for the same reasons given for the thawing of meats, especially poultry for roasting. Thaw broilers and cut-up poultry at least partially, until the pieces can be separated. If poultry is cooked when not completely thawed, allow additional cooking time. All poultry, whether fresh or frozen, is best thoroughly cooked at a moderately low temperature, and all poultry has a better flavor, and texture, and is juicier when you have used *Ac'cent* (monosodium glutamate) in freezing preparation.

Always thaw poultry in the package in which it was frozen. The same means can be employed to hasten thawing as are recommended for meats: on lower shelf of refrigerator; on work surface at room temperature; on work surface placed before an electric fan; in warm oven (200° to 250° F.). Allow 6 to 8

hours for thawing of poultry of about 3 pounds in the refrigerator. Larger size birds require a somewhat shorter time per pound for thawing. Similarly to meat, thawing times are reduced considerably by the electric fan and oven methods. Package and freeze stuffing for roasters separately. Fill on day the chicken is to be roasted.

Country Style Baked Chicken

1 disjointed frying or young roasting chicken, completely defrosted
3 tablespoons butter or margarine
4 tablespoons flour
A pinch of saffron
Salt and pepper to taste
1 $10^1/_2$ oz. can condensed cream of mushroom soup
$^2/_3$ cup water

Dry separated pieces of chicken thoroughly between paper towels. Combine flour and seasonings, then roll chicken in mixture. Melt fat in heavy skillet and sauté chicken until golden brown. Blend soup and water, then pour over chicken. Cover skillet and bake for 45 minutes at 350° F. Uncover and bake for 15 minutes longer. Serves 4.

Fried Chicken with a Difference

Thaw chicken or chicken parts enough to separate, then place in a single layer in shallow pan. Cover generously with your favorite French dressing and marinate in refrigerator for at least 2 hours. Drain chicken, season with salt and pepper and roll in flour. Fry in hot fat until lightly browned on all sides. Reduce heat and cook slowly for 20 to 30 minutes, or until tender. Serve with cream gravy.

Fish—Thaw fish completely and cook as fresh fish by baking, broiling, pan-frying, deep-fat frying, boiling, or steaming. Partially thawed fish requires slower and longer cooking periods and is more likely to stick to the pan when dry heat methods are used. Slow thawing in the package on a lower shelf of the refrigerator is the best method for defrosting. Frozen fish may

also be placed unopened on a work surface at room temperature or in front of an electric fan at room temperature; both procedures accelerate thawing. A 1-pound package requires from 6 to 10 hours in the refrigerator; about 3 hours at room temperature; and about 2 hours in front of an electric fan. Fish should be cooked while still chilled because it will spoil as readily as fresh fish.

Fish Chowder

1 pound of fish fillets (cod or haddock) partially thawed
1 cup cold water
1/3 cup salt pork, finely diced
1 medium onion—peeled, sliced, and separated into rings
2 cups diced raw potatoes
2 teaspoons salt
1 cup milk
1 can evaporated milk
1 tablespoon parsley (from the freezer) chopped

Cut fillets into large pieces; add water. Simmer over low heat for 10 minutes, or until fish flakes apart easily. Drain and reserve stock. Flake fish and remove any small bones. Cook salt pork and onion rings until golden-brown, in large saucepan. Pour off excess fat, add fish stock, potatoes, and salt. Simmer until potatoes are tender. Blend in fresh and evaporated milk, add the flaked cooked fish, then season to taste. Bring to boiling point over low heat—but *do not boil.* Serve hot, garnished with chopped parsley. Serves 4.

Hate fish odors in the house? Then try this recipe:

Oven Fish-Fry!

2 pounds defrosted fish fillets, or steaks
1/2 cup milk plus 4 teaspoons salt
1 cup fine bread crumbs, or crushed corn flakes
Season to taste (add a bit of dry mustard, grated cheese, or chili powder for a flavor difference)

Dip pieces of fish in milk, then roll in crumbs. Coat well and evenly. Place in shallow oiled baking dish side by side—*one layer only.* Drizzle melted butter, margarine, or salad oil over fish. Bake in very hot oven —525° F. for 15 to 20 minutes, or until golden brown. Serve with tomato, mustard, or any favorite sauce. Serves 6.

Shellfish—Crabs, lobsters, and sometimes shrimp are cooked before they are frozen. In such cases, they must be completely thawed for use in cocktails, salads, and the like. However, in cooked dishes, such as lobster Newburg or shrimp Creole, the product need be only partially thawed so the pieces can be broken apart and mixed with the other ingredients of the dish; being small, they will completely thaw and heat through quickly during the cooking period.

Other shellfish, including scallops, oysters, and clams, are not cooked prior to freezing, and should be completely thawed before using in cooked dishes. When serving oysters or cooked shrimp as a cocktail, use them while still chilled and never allow them to warm to room temperature.

Seafoods seem to have a special affinity for *Ac'cent*—the glutamate really brings out the very best in the flavors from the sea. Just try it (a pinch) and you will be pleased.

Shrimp Kabobs

Defrost raw shrimp, remove shells, and clean. Preheat broiler 10 minutes. On 6-inch skewers, alternate raw shrimp with 2 or more of the following: bacon squares, mushroom caps, or pineapple chunks, green pepper squares, dill pickle pieces. Brush with melted margarine or butter flavored with minced onion or garlic, Worcestershire and/or lemon juice. Season with salt and pepper. Broil 2 to 3 inches from heat, turning until all sides are golden.

COOKING WITH FROZEN DAIRY PRODUCTS

Eggs—If individual eggs are frozen for poaching or frying as described on page 160, they need not be thawed prior to cook-

ing, but are taken out of their wrapping and slipped into simmering poaching water or into a skillet over low heat for frying, in their solidly frozen state. They will take a little while longer to cook than fresh eggs, but the low heat or simmering cooks them slowly enough to thaw during the cooking procedure.

Frozen eggs to be used in baking must be thawed before they are used. Thaw them in the refrigerator, or at room temperature, always in the unopened package. If packages are made small for cooking purposes when they are frozen, thawing presents no problem—about a half hour at room temperature is sufficient to thaw small quantities.

Frozen eggs should be used while they are still chilled, particularly when yolks are frozen separately.

Frozen egg whites can be used in the same manner for cooking purposes as one would use fresh egg whites. Remember that $1^1/_2$ tablespoons of thawed egg white equals 1 egg white. They make just as good meringues, and angel cakes as fresh egg whites do. It is also useful to know when baking angel cakes that 11 egg whites (unbeaten) fill a 1-pint container.

When whole eggs are frozen, or the yolks frozen separately, sugar, corn syrup, or salt is added before freezing (page 159), so these products cannot be used in all recipes. When sweetening has been added, allowance for the amount added at time of freezing should be made when using them in a recipe. Egg yolks which have been sweetened should never be used for making mayonnaise or salad dressings, or sauces such as Hollandaise or Marguery. Yolks to which salt has been added should be used for making mayonnaise or salad dressings; make allowances in your recipe for the amount of salt added at the time of freezing. One tablespoon of thawed yolk is equivalent to 1 egg yolk; while 16 to 17 yolks fill a 1-pint container.

Other Dairy Foods—Milk, butter, cream, and cheese should

always be thawed completely in the unopened package (in refrigerator or at room temperature) and then used in the same manner as one would use the fresh, except cream (see page 160).

THAWING AND SERVING COOKED FOODS

Cooked foods such as a la King dishes, stews, hashes, soups, meat dishes, etc., need not be thawed if they can be removed from their packaging while still in the solidly frozen state; otherwise they must be thawed partially so as to remove the contents of the package to put the food in the utensil for heating. Frozen cooked foods are heated only to serving temperature, preferably in a double boiler or a covered baking dish in a moderate oven. Stir carefully to prevent mashing the product. Be careful not to overcook the food in reheating it, for it is liable to become mushy and shapeless. Plan to serve frozen cooked foods as soon as they are heated to serving temperature.

THAWING AND COOKING BAKED GOODS

Bread, Biscuits, Rolls—Directions for freezing these items baked or unbaked are given on pages 169–173. If bread, biscuits, and rolls are frozen unbaked, thaw them completely in the unopened package, then let them raise and bake as fresh goods. If they are baked before being frozen, thaw them in the unopened package by letting them stand at room temperature. Bread and rolls thaw very quickly, as the moisture content of the finished baked product is very low. A loaf of bread, standing at room temperature, will thaw in about 30 minutes. To serve rolls or biscuits hot, place them in a moderate oven (350° F.) with the packaging intact, and let them thaw and heat through simultaneously. To heat rolls or biscuits to serving temperature takes only about 15 or 20 minutes. Bread, in its original wrapping, may also be warmed for serving. Keep

baked goods in their wrappings until they are thawed or heated through, not only to prevent loss of moisture from the product, but to keep moisture in the air from collecting on the outside of the product, which happens when a cold surface is exposed to room temperature (you have noticed how a glass of ice water collects moisture on the outside when standing on the table).

Brown 'n' Serve Rolls

2 packages dry yeast, dissolved in
1 cup warm water
1 teaspoon sugar, plus
5 teaspoons salt, dissolved in
2 cups scalded milk

Cool milk, sugar, and salt mixture, then add yeast mixture and blend in

6 cups sifted all-purpose flour, add
1/2 cup melted shortening, then mix in
4 scant cups sifted all-purpose flour

Turn out on lightly floured board; knead until smooth and satiny. Place dough in oiled bowl. Rub top of dough with soft butter or margarine. Cover with damp towel. Set in warm place (85° F.) until double in bulk. Punch down, then re-knead and divide dough into four parts. Cover with damp towel and let rest 20 minutes. Shape into rolls and let rise in warm place until nearly as high as regular rolls. Bake pan rolls for 40 minutes at 275° F. Cool in pans for 20 minutes, then turn out to cool at room temperature. Wrap carefully in freezer paper. Keep no longer than 3 months.

To Serve: Place thawed rolls on cookie sheet and brown in hot oven (450° F.) for 7 minutes.

Pies—If pies are frozen unbaked, they can be slipped into the oven for baking still solidly frozen, or when partially thawed; bake them as you would the corresponding fresh pie, allowing a few additional minutes in the baking period.

Frozen baked pies may be warmed for serving, or be brought to the table after the pie has thawed to room temperature; for

best results, thaw in the package. If pies are to be warmed, place in a moderate oven (350° F.) for about 20 to 30 minutes.

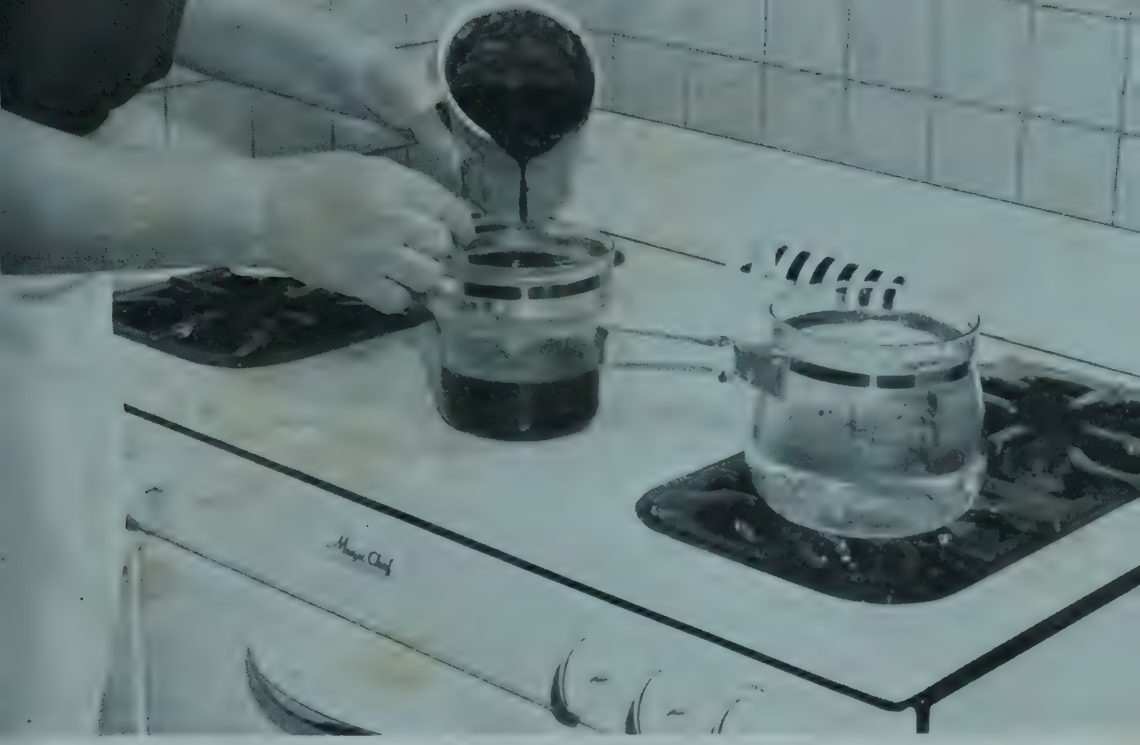
Cakes and Cookies—Baked products or batter and doughs should be thawed completely before being used. They thaw quickly at room temperature in 15 to 25 minutes. Bake the batter or dough as you would the fresh. Baked frozen cakes, cup cakes, or cookies should be thawed in the unopened package as all baked goods will collect moisture if exposed to the air, and become soggy.

Slice and bake these cookies while visiting with your guests—wonderful with milk or tea.

Mincemeat Freezer Cookies

1 cup sugar
3/4 cup shortening
1/2 teaspoon vanilla
1/2 teaspoon grated lemon peel
1 beaten egg
2 1/2 cups all-purpose flour
1 teaspoon cinnamon
1/2 teaspoon salt
1/2 teaspoon soda
1/2 cup mincemeat
1/2 cup chopped nuts

Cream sugar and shortening. Add vanilla, lemon peel, and egg, then blend well. Add sifted dry ingredients alternately with mincemeat. Stir in nuts. Shape into rolls, wrap carefully with freezer paper and place in freezer. Defrost at room temperature for 15 minutes. Slice 1/4 inch thick. Bake on ungreased cooky sheet in moderate oven (375° F.) 10 to 15 minutes.



Velva Fruit, a delectable frozen dessert, is made from sweetened fruit purée and gelatin. Illustrated is purple raspberry purée being added to dissolved gelatin preparatory to freezing.

Finished Velva Fruit is mouth-watering to see as it is spooned from freezer. It may be eaten when frozen, or packed in freezing containers and stored in the freezer for later use.

It is easy to make ribbon, or variegated, ice cream. Freeze vanilla cream and pour "ribbons" of sauce or fruit purée through cream as freezing container is filled. Then allow to harden in home freezer.

Molded ice cream out of the home freezer for special events and parties! Any of the gelatin molds—large or the small individual ones—may be utilized for this purpose if regular ice cream molds are not available.

CHAPTER X

Home Freezers Provide America's Favorite Dessert—Ice Cream

One of the first discoveries a family makes about a home freezer is how good it keeps ice cream and the thrill of having it there—always on hand to enjoy at any time for any occasion, to serve in cone or dish.

Ice cream for your freezer may be purchased in quantity from your druggist or supermarket at a saving over small purchases, or you can make it yourself in an ice cream freezer or the household refrigerator, although refrigerator ice cream doesn't quite measure up to that made in an ice cream freezer, you will have to agree.

This chapter is devoted principally to the good old crank freezer kind of home-made goodness that has more or less been relegated to the land of childhood memories. The old ice cream freezer was put up on the top shelf of many a cupboard or back in the corner of the storeroom because it took so much time and trouble to make the cream, then it had to undergo hardening with another ice and salt pack, and finally, when opened, the cream had to be consumed with great gusto before it melted to mush. With a home freezer, you simply make ice cream in any quantity you desire, pour it into moisture-vaporproof containers like those used for freezing fruits, then store it in the freezer where it is ready to serve any time of the day, come rain or shine.

If that old crank freezer is still around, get it out and see how easy it is to make truly delicious ice creams at home when it

can be stored in your home freezer until you want it. Or, you may wish to invest in one of the new electric ice cream freezers which take the arm work out of making ice cream.

The fruit purées which are described in detail on pages 138–145 go hand in glove with ice cream in your freezer. They can be used not only to dress up your ice cream into sundaes, but to make "ribbon" ice cream out of plain vanilla as well. By themselves, they also make a frozen dessert called "Velva Fruit" that—as its name implies—is the smoothest bit of deliciousness ever melted in your mouth. Velva Fruit has a not-too-sweet, true fruit flavor that is simply delicious.

There is no limit to the kind of ice creams, sherbets, ices, and Velva Fruits you can freeze. For fruit sherbets and ices you can use your favorite recipes, or try the basic recipes and variations for the custard type and the cream type of vanilla ice cream.

Ice cream, or any other frozen dessert, may be packaged in any of the tub- or cup-shaped containers used for freezing foods. In most instances the pint or quart sizes will be the more practical. However, if your freezer is large enough, ice cream may be put into a gallon size container for storage and scooped out for serving with a regular ice cream scoop.

Ice cream may also be frozen in molds for special occasions. Use either individual or large molds for this purpose which you use to make molded gelatin dishes. When the ice cream is made, fill the molds to overflowing, cover with waxed paper, and place in the freezer to set. If they are not to be served within a day or two, package the molded ice cream for storage by wrapping the large molds in moistureproof Cellophane and heat-seal the package; pack individual molds in a waxed folding carton (large size such as is used for steaks, etc.), overwrapping the carton with moistureproof Cellophane and heat-sealing the package. Ice cream molds may be turned out of the molds before being packaged if desired; to turn out ice

cream molds, dip mold in warm water for a few seconds as you would a gelatin mold, but be certain to use *warm*, not hot, water for turning out ice cream molds.

Custard Type Ice Cream

1 quart milk, scalded
1 tablespoon cornstarch
1 cup sugar
1 egg, beaten
2 teaspoons vanilla
Few grains salt
1 pint heavy cream

Procedure: Mix sugar and cornstarch well, add to scalded milk slowly, stirring milk while adding. Cook 15 to 20 minutes in double boiler. Beat egg, pour small amount of hot milk mixture over beaten egg, stirring well. Add egg to milk mixture and cook 3 to 5 minutes. Cool; then add vanilla and cream; place in ice cream freezer, and freeze. Makes 2 to $2^1/_2$ quarts ice cream. Two eggs may be used in this recipe, omitting the cornstarch.

To make a quantity of ice cream for storage, use the following ingredients with procedure as described above: 6 quarts milk, scalded; 3 pounds sugar; 6 tablespoons cornstarch; 1 teaspoon salt; 6 eggs; 4 tablespoons vanilla; 3 quarts heavy cream. This makes about 3 to $3^1/_2$ gallons of ice cream and may have to be divided for freezing.

Cream Type Ice Cream

1 quart light cream
$^3/_4$ cup sugar
$1^1/_2$ teaspoons vanilla
Few grains salt

Procedure: Scald cream, then cool; add sugar, salt, and vanilla; place in freezer, and freeze. Makes approximately $1^1/_2$ quarts ice cream.

Follow procedure above for the quantity ingredients given here: 4 quarts milk, scalded with 5 quarts heavy cream; 6 pounds sugar; 4 tablespoons vanilla; 1 teaspoon salt. This makes about 3 gallons of ice cream.

ICE CREAM VARIATIONS

The amounts given are for use in recipes yielding 1-$^1/_2$ to 2-$^1/_2$ quarts of ice cream.

Avocado—Add 2 cups sweetened avocado pulp and the juice of 1 lemon to freezer mixture just before freezing.

Chocolate—Beat 3 squares melted unsweetened chocolate into custard before folding in cream.

Coffee—Scald 1/3 cup coffee with milk before adding other ingredients.

Strawberry—Add 1 pint of frozen sliced strawberries or 1 to 2 quarts fresh strawberries (washed, crushed, and sweetened) to freezer mixture just before freezing.

Pistachio—Add 1 teaspoon almond extract and small amount green food coloring to tint ice cream a delicate pistachio green. Chopped pistachio nuts may also be added.

Maple Nut—Substitute maple syrup for the sugar in either recipe and add 1 cup finely chopped nuts.

Butter Pecan—Toast 1/2 cup broken pecan meats in 2 tablespoons butter in skillet for about 10 minutes. Add to freezer mixture just before freezing.

Banana—Add 1 cup sieved bananas and 1/4 cup lemon juice to freezer mixture just before freezing.

Peppermint Stick—Add 1 pound red-and-white peppermint candy, crushed, to scalded milk when making freezer mixture.

Macaroon—Add 1 cup macaroon crumbs to freezer mixture before freezing.

Date, Nut, Cherry—Add 1/2 cup pitted, chopped dates; 1/2 cup chopped Maraschino cherries; and 1 cup chopped nuts to freezer mixture just before freezing.

Cantaloupe—Add 2 cups cantaloupe pulp (put through food chopper) and juice of 1 lemon to freezer mixture just before freezing.

In making ice cream, be sure to use the right proportions of ice cream salt and ice in the freezer, otherwise freezing will take place very slowly. One part of salt to each 3 or 4 parts of ice is best. Also start with a cool mixture, since a warm mixture may turn to butter or result in a coarse texture, and turn crank slowly at first until there is some resistance against the dasher showing the freezer mixture has started to thicken, then turn crank rapidly until the cream is frozen. Remove dasher and let ice cream stand to harden.

TO MAKE RIBBON ICE CREAM

Either fresh fruit purée or the frozen product (preparation instructions on page 142) may be used. If frozen is used, thaw the purée by putting the sealed container in cold or lukewarm water (not hot) for about 20 to 40 minutes. Pour the purée in "ribbons" through the ice cream as you fill the containers with ice cream from the crank freezer. This can be done in one of two ways: by pouring the purée in a thin stream simultaneously with the ice cream into the container; or by filling the container half full of ice cream, adding a generous portion of purée, then filling the container to the top with ice cream getting the ribbon effect by turning a spoon through the contents two or three times.

Chocolate and butterscotch ribbon ice creams may be made in the same way as the fruit ribbon ice creams, using a thick fudge or butterscotch syrup (made previously and chilled) instead of the fruit purées.

FRUIT FLAVORED ICE CREAMS

You will find that the fruit purées give a much finer tasting fruit ice cream than can be made with the fresh mashed product. Any of the following purées may be used: Black or red raspberry, strawberry, loganberry, Boysenberry, dewberry, peach, nectarine, persimmon, apricot, currant, pineapple, grape, plum, cherry, or cranberry.

To make any of these fruit flavored ice creams, simply thaw a container of the desired purée as described under making "Ribbon Ice Cream," and add the contents of the package to the freezer mixture just before freezing.

TO MAKE VELVA FRUIT

Velva Fruit is a frozen product containing no milk or cream, just the sweetened fruit purée and gelatin. Either the fresh

purée or the frozen purée may be used to make it. Thaw the frozen purée as suggested previously before using. The following recipe gives approximately one gallon Velva Fruit:

6 cups fruit purée
1½ to 2 cups sugar (omit sugar if frozen, sweetened purée is used)
2 tablespoons lemon juice (omit for acid fruits)
¼ teaspoon salt
2 tablespoons granulated gelatin
½ cup cold water

Procedure: Mix fruit purée, sugar (if fresh, unsweetened purée is used), lemon juice where needed with bland fruit, and salt. Soak gelatin in cold water for 5 minutes, then dissolve by heating over boiling water and add to the fruit purée. Fruit purée should be cool (70° F.) when gelatin is added. If purée is too cold, the gelatin will congeal before mixing thoroughly; if purée is too warm, the mixture will expand too much when whipped in the freezer. Add gelatin slowly to the purée mixture, stirring continuously. Pour into ice cream freezer and freeze (about 20 minutes, or until crank turns hard), using 1 part salt to 4 parts ice.

Velva Fruit may be served as soon as it is frozen or it may be packed in tub- or cup-shaped moisture-vaporproof containers for freezer storage. If stored in freezer before using, place the packages in freezer at once so it won't soften and later form coarse ice crystals.

MAKING FROZEN DESSERTS IN REFRIGERATOR TRAYS

You may not have an ice cream freezer, but you will find a variety of easy to fix, prepared ice cream mixes on your grocer's shelves which will make excellent home-made ice cream in refrigerator trays. Follow the manufacturer's directions carefully and remember that in freezing the prepared mix, the trays must be removed from the freezer just when ice crystals begin to form and the contents vigorously beaten with an electric mixer or egg beater. This beating insures good volume and a smooth, creamy dessert. After the mix has been thoroughly whipped, it may be packaged in moisture-vapor-proof cartons

and returned to the home freezer for its final freezing. Try several brands until you find the one the family likes best.

If gelatin, egg white or marshmallows are included in the recipes, ice creams, sherbets, ices, and many frozen desserts can also be frozen in refrigerator trays from which the dividers have been removed, provided the trays are placed directly on the bottom of the freezing compartment of a chest-type freezer or the shelf of a vertical freezer.

Two different procedures may be used to get a soft, smooth frozen dessert similar to that produced in an old-fashioned ice cream freezer. One method involves folding in whipped cream into a soft jell. According to the other procedure, the mixture is permitted to jell, then it is whipped with an electric mixer or an egg beater, after which the freezing is completed.

Orange Sherbet

Dissolve $^3/_4$ cup sugar in 2 cups of hot water and boil 2 minutes. Add 1 package of "Jello" or other gelatin dessert powder into the hot syrup. Add 1 cup water, 1 cup orange juice, and 2 tablespoons of lemon juice. Freeze in ice cube trays with dividers removed, placed on bottom or metal shelf of freezer. When partly frozen, transfer to cold bowl and beat with rotary egg beater or electric mixer until fluffy. Return to tray and freeze, stirring well after 30 minutes. Makes $1^1/_2$ quarts.

Apricot Mallow

16 marshmallows
1 cup milk
Few grains salt
$^1/_3$ cup sugar
$^2/_3$ cup puréed cooked dried apricots
1 cup whipping cream

Quarter marshmallows and place in saucepan with milk and salt. Stir over low heat until marshmallows are completely dissolved.

Cool until slightly thickened. Stir sugar with apricot purée. Fold into marshmallow mixture. Fold in whipped cream. Turn into ice cube trays, with dividers removed. Place trays on bottom of freezing compartment of chest-type freezer or shelf of vertical-type freezer and freeze without stirring until firm.

Frozen Lemon Pie

2 egg yolks
1/2 cup sugar
1/4 cup lemon juice
Grated rind of 1 lemon
2 egg whites
1 cup evaporated milk, whipped
Crushed cookies

Beat egg yolks, add sugar. Stir in lemon juice and rind and cook slowly, stirring constantly, until mixture coats spoon (5 or 8 minutes required). Beat whites, add 2 tablespoons sugar (keep 2 tablespoons sugar out of the 1/2 cup); fold into the cooked lemon mixture. Fold in whipped milk. Line ice cube trays, with dividers removed, with half the crumbs and top with the remaining crumbs. Freeze on bottom of freezing compartment or on shelf of vertical freezer.

Frozen Eggnog

3/4 cup heavy cream
2 eggs
1/4 cup granulated sugar
Few grains salt
1 teaspoon rum flavor

Add 1/2 teaspoon sugar to the cream. Chill small bowl. Whip with electric mixer or rotary egg beater. Mix sugar with eggs. Beat. Add flavoring to beaten eggs. Fold in whipped cream. Pour into ice cube trays, with dividers removed. Place tray on bottom of chest-type freezer or on shelf of vertical freezer to freeze.

Grape Mousse

1 cup grape juice
20 marshmallows
1/2 pint whipping cream

Heat grape juice in double boiler with the marshmallows that have been cut into quarters. Stir until marshmallows are dissolved. Cool. Whip cream, then fold into the grape mixture. Pour into ice cube trays, with dividers removed. Place tray on freezer bottom or on shelf of vertical freezer. Stir when partially frozen.

SUGGESTIONS FOR SERVING ICE CREAM

It is surprising how many ways you will find to serve ice cream when you have it on hand in the freezer, and how quickly you will come to depend upon its being there in the freezer for in-between meal snacks, to round out dinner and luncheon menus, and to make party fare out of cakes and pies. For ease in serving, be sure to purchase at least 2 different size ice cream scoops. Hardly a day will go by without the children eating it, or your serving it in one of many, many ways. Allow 3 servings to a pint; 6 servings to a quart; 22 to 25 servings to a gallon.

Try serving ice cream in the following ways:

As filling for cream puffs, served with hot fudge sauce.

As baked Alaska: Scoop out center from serving of sponge cake, fill with ice cream, top with stiffly beaten meringue, place in hot oven (450° F.) until delicately browned, serve immediately.

As ice cream pie: Fill a baked pie shell with ice cream; completely cover the surface of the ice cream with stiffly beaten meringue (to protect ice cream from melting in the oven); bake in very hot oven (500° F.) for 2 or 3 minutes which should lightly brown meringue; serve immediately.

As "melon balls" heaped in half of cantaloupe, making tiny balls with melon scoop.

As vanilla, chocolate, or hot maple syrup sundae.

As nut sundae, topping ice cream with toasted, chopped almonds (or any chopped nuts).

In baked tart shells, topped with whipped cream.

As toasted, shredded cocoanut sundae, or crumbled macaroon sundae.

As ice cream cup cakes: Hollow out center of cup cake, fill with ice cream, top with chocolate, butterscotch, or fruit sauce.

As chocolate mint sundae: Sauce is made by melting chocolate mint patties in just enough water to prevent them scorching while melting.

Pie a la mode; cake a la mode.

As honey sundae, topping ice cream with honey and salted nuts.

Use sherbets to dress up fruit cocktail for flavor as well as appearance.

Mix a little honey into crushed pineapple; serve over vanilla ice cream.

Ice Cream Cups

Melt 1 package of semisweet chocolate bits with 2 tablespoons of butter. Using spatula, brush a fairly thick coat of chocolate on the sides and bottom of small paper baking cups with fluted edges—freeze. Remove paper by peeling, then thaw 10 to 15 minutes. Fill with scoops of ice cream. Mint flavored ice cream goes especially well in these chocolate cups.

Coconut Ice Cream Balls

Tint coconut any color. Scoop out fairly hard ice cream. Roll balls quickly in colored coconut; return to freezer until 10 minutes before using.

CHAPTER XI

Sportsmen's Delight— Game, Fish, and Freezers

Now that freezing makes possible the preservation of game in excellent condition over a long period of time, many state game rulings are out of step with the modern hunter and fisherman. Many persons interested in hunting and the sport of rod and reel become disheartened, asking themselves (and the State Game Warden) "why must I dispose of my choice catch by eating it, giving it away, or by throwing it out within a matter of days after the close of the open season?"

To-day's hunter and angler have a much better lot than those of ten years ago in regard to the amount of game they are allowed to keep and store. A few years ago only seven states had no restrictions on the length of time wild game could be legally stored after it had been caught during the open season. There are now 22 states allowing the sportsman to bag his season's limit and to keep it in frozen storage until he wishes to use the meat. A few states stipulate that some game (deer and elk) may be indefinitely stored in a licensed warehouse, while still other states permit storage in any locker plant, provided the game is registered. There are state regulations allowing a 30, 60, 90, or 180 day storage period BUT they carefully limit the amount of game that can be legally stored to 1 or 2 days' bag limit. To be on the safe side and also to insure putting into the freezer all that you are entitled to under the law, check the state law with your friendly game warden.

The sportsman in the field, or the man on deck scanning a troll line for the flash of a silver fin will profit substantially by

knowing how to care for his game so he can bring it home in the best condition for good eating. If game is not cared for properly, it will deteriorate so as to be partially or wholly inedible. There are instances where hunters have lost their meat by spoilage the second day after it was bagged. Had it been well taken care of, there is no reason why the meat could not have been in excellent condition for a week or longer in very cold weather.

FIELD POINTERS FOR BIG GAME*

Two of the greatest causes of game meat spoilage are souring and flies. The natural ripening of the meat which makes it more tender and juicy, occurs as soon as rigor mortis sets in the animal and is to be both expected and desired. However, there is danger of "stinking-sour", commonly described in game as "overheated," which will occur in meat which has not been cooled properly. It is failure to remove quickly the animal's body heat which causes the stinking-sour.

In order to take the best possible care of a carcass, it is well for the hunter to equip himself with the following: a good sheath knife with a 7-inch blade; a can of black pepper; 5 yards or more of cheesecloth; 10 feet or more of rope; and elk hunters will do well to have a belt axe.

As soon as the animal is bagged the throat should be cut so the animal bleeds properly; the testicles removed, and the scent bags just inside the gambrel joint should be cut out. The animal should then be dressed and the carcass laid wide open so that body heat can be removed quickly and the cut surfaces dried to discourage insect attacks.

How to Bleed and Dress—Make certain that animal is dead; approach animal from rear and place knee on its neck; reach

* Much of the information given here on caring for big game in the field was generously contributed by Prof. W. V. Halverson, University of Idaho, who is considered an outstanding authority on the subject of game meat.

across the body and find the soft cavity where neck meets the breast bone and insert the hunting knife at this point, plunging it in as far as it will go so as to reach the main arteries. One insertion of the knife should be sufficient if the knife is worked around well inside the neck and moved sideways in both directions to sever both of the larger blood veins. To stick the carcass for bleeding in this manner is especially desirable if the hide is to be preserved for tanning or mounting.

Dressing the carcass is a problem which must be accomplished according to the size of the carcass and the conditions where the animal is killed. Deer can readily be suspended on a tree, using a gambrel stick and hoisting the carcass as the dressing out progresses. Other and larger carcasses may have to be dressed laid out flat on the ground, but take care to arrange the carcass so that the blood will not run under the hide and soak it. If there is a slight ground incline in the vicinity, lay carcass with head downward to promote bleeding away from carcass. A pile of brush will also facilitate bleeding and cooling of the carcass; if used, it should hold the carcass at least 18 inches off the ground.

The most popular way of cleaning out the carcass is to cut around the rectum first, then make the slit up the underside down through the neck so as to remove the gullet along with the offal. Tie the rectum and remove all organs up to the diaphragm; cut diaphragm free from ribs making organs inside chest cavity accessible; loosen gullet at neck; reach inside animal until the first cut at the throat arteries is felt, and pull everything away from cavity of carcass. Remove heart and liver carefully from viscera and dispose viscera some distance away from dressed carcass so it will not attract flies or other insects.

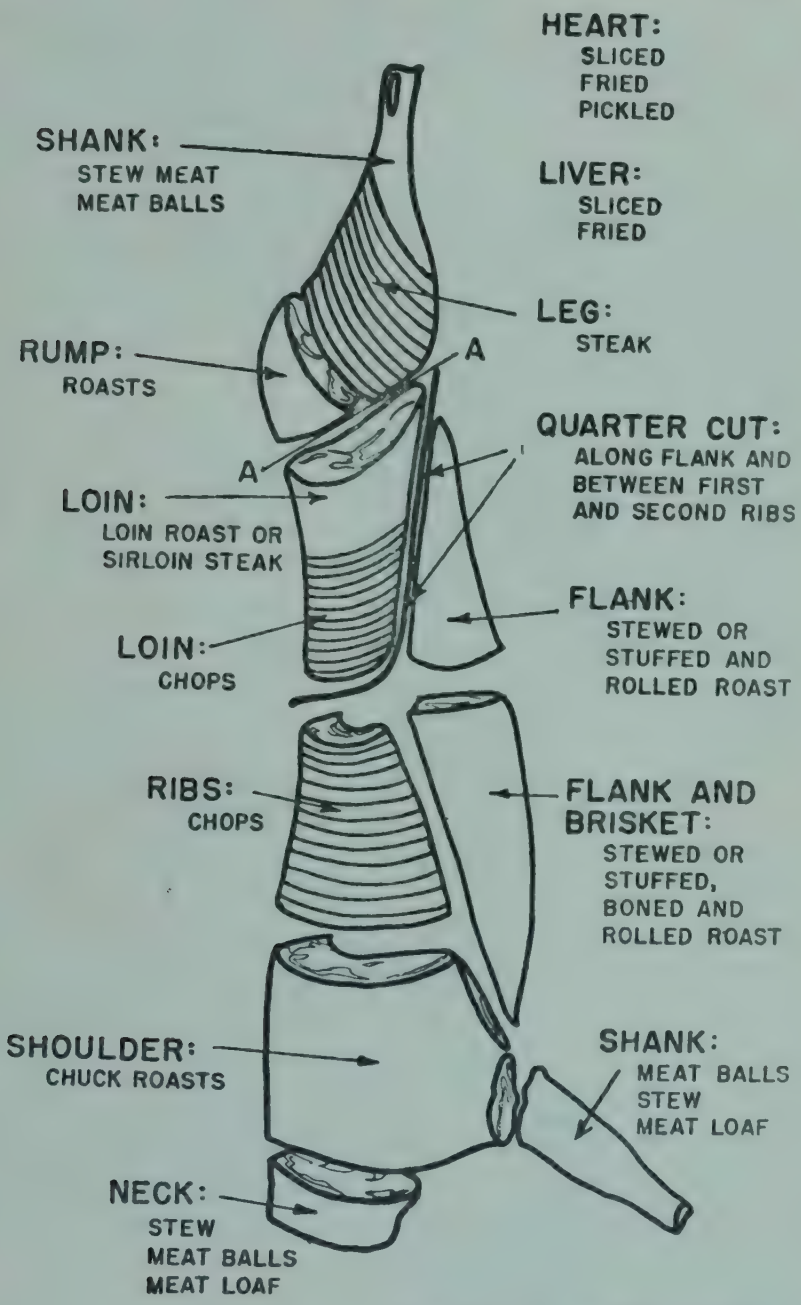
On warm days blowflies appear in large numbers as soon as the carcass is opened. If they are permitted to lay their eggs on the warm meat, the meat may be lost to maggots within a few hours. Although any group of hunters is likely to disagree

on the method of handling game meat, any one or a combination of the following three procedures will enable the hunter to meet almost any situation he may encounter: (1) Sprinkle black pepper over all the exposed surfaces of meat; (2) cover meat side of carcass with cheesecloth; (3) glaze meat surfaces with blood from the animal. The use of black pepper on exposed surfaces of meat is perhaps the most common procedure to protect the carcass from flies and insects; it should be dusted generously over all meat surfaces and can be used advantageously in combination with the glaze procedure for surfaces which do not glaze readily. To glaze a carcass, save a quart or more of the blood in the body cavity as the animal is dressed; dip the blood up in the cupped hand and smear over all exposed meat surfaces; when dry and coagulated it will leave a hard, glossy skin which the blowfly cannot penetrate. In climates where yellow jacket wasps are numerous, cheesecloth covering the meat surfaces of the carcass will be especially effective. Be sure not to use a heavy cloth when cloaking the meat surfaces of a carcass, as it will not permit radiation of body heat.

It is common practice to remove the legs of carcasses at the knee joints. Hide from deer is seldom removed; but skinning of any thick-skinned animal such as elk is claimed to be beneficial because it helps cool the carcass. Elk carcasses are most often halved by cutting down the back of the carcass so they will lie wide open. Many hunters also prefer to quarter them immediately before they are taken back to camp.

In the case of large game such as elk when the kill takes place just before dark and it is a long way back to camp, the animal should be completely dressed out, the carcass propped open for thorough cooling and placed on top of a deep brush pile where it can be left until the next day, protecting the meat in the meantime, however, by any of the methods outlined above.

As soon as game is delivered at camp, it should be hung up



SKETCH BY WAYNE M. JUDY

Reprinted courtesy "Quick Frozen Foods"

A chart showing how a venison carcass is cut for freezing.

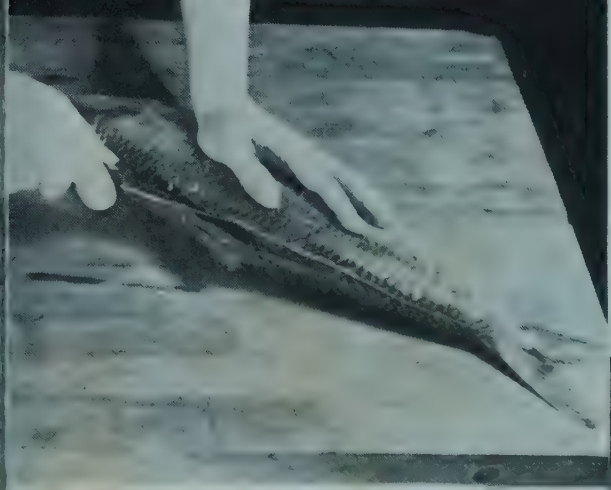
from a pole so that the meat is at least three feet off the ground. A small smudge fire may be maintained under the meat to discourage flies and insects, but there should not be sufficient smoke to smoke the meat. If whole carcasses are hung at camp for several days, they should be hung by the back legs spread well apart so air may circulate freely through the body cavity.

When skinning an animal, it need not be a difficult task, particularly if the carcass can be hung. Cut each hind leg at the knee and along the inside of the leg to the center cut at the body. Loosen the skin around the knee joint with a knife to get the skinning started. By working slowly and carefully, the hide can then be "peeled" down the legs and the entire body. Pull the hide loose right up to where the head joins the neck; insert a knife into the flesh of the neck and cut all around the neck loosening the head, but being careful not to cut the hide. Then, by twisting the head loose from the carcass, both head and hide will come free.

CUTTING AND WRAPPING BIG GAME

The cutting of large game meat follows the conventional cuts for beef; and, like beef and other domestic animals, it is recommended that the cutting be done by an expert meat cutter either at the locker plant or local meat market.

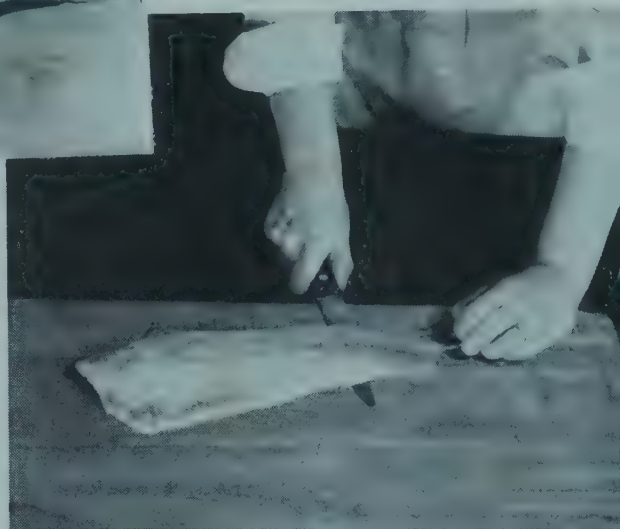
Special taste treats are in store for the hunter who utilizes all parts of the carcass, rather than merely the usual venison roasts, steaks, or chops. The shanks and neck, ground and mixed with ground pork or ground veal, make excellent meat balls, patties, and meat loaf. The shanks, neck, flank, and brisket will impart a delightful and different flavor if used in stews either alone or in combination with other meats. The liver and heart can be used to make a paté which can then be frozen and stored until the special occasion arises calling for something so fine for appetizers with cocktails.



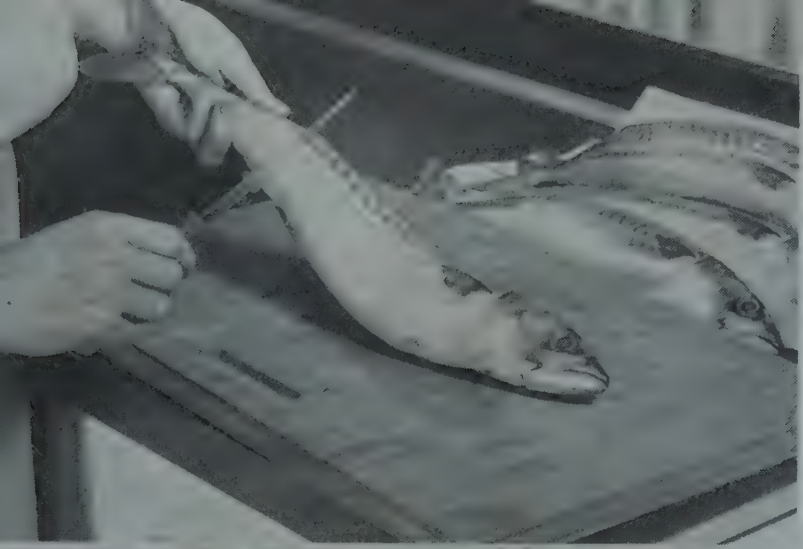
(Left) Filleting: With a sharp knife, cut through the flesh along the back from the tail to just behind the head.

t) Cut down to the backbone just the napebone. Turn the knife flat ut the flesh along the backbone to il, allowing the knife to run over the rib bones.

(Left) Lift off the entire side of the fish in one piece, freeing fillet at the tail. Turn the fish over and repeat the operation on the other side.



ght) If you wish, you may skin the ts. Lay the fillets flat on the cutting rd or table, skin side down. Hold the end with your fingers, and with a e cut through the flesh to the skin about half inch from the end of the fillet. tten the knife on the skin by pushing knife forward while holding the free of the skin firmly between your fingers. *otos courtesy of U. S. Fish and Wildlife Service*)



Preparation of small whole fish for freezing is here illustrated. (*Photos reproduced through courtesy of General Electric Co.*) Fish are scaled, then beheaded and eviscerated; tail and fins are trimmed.

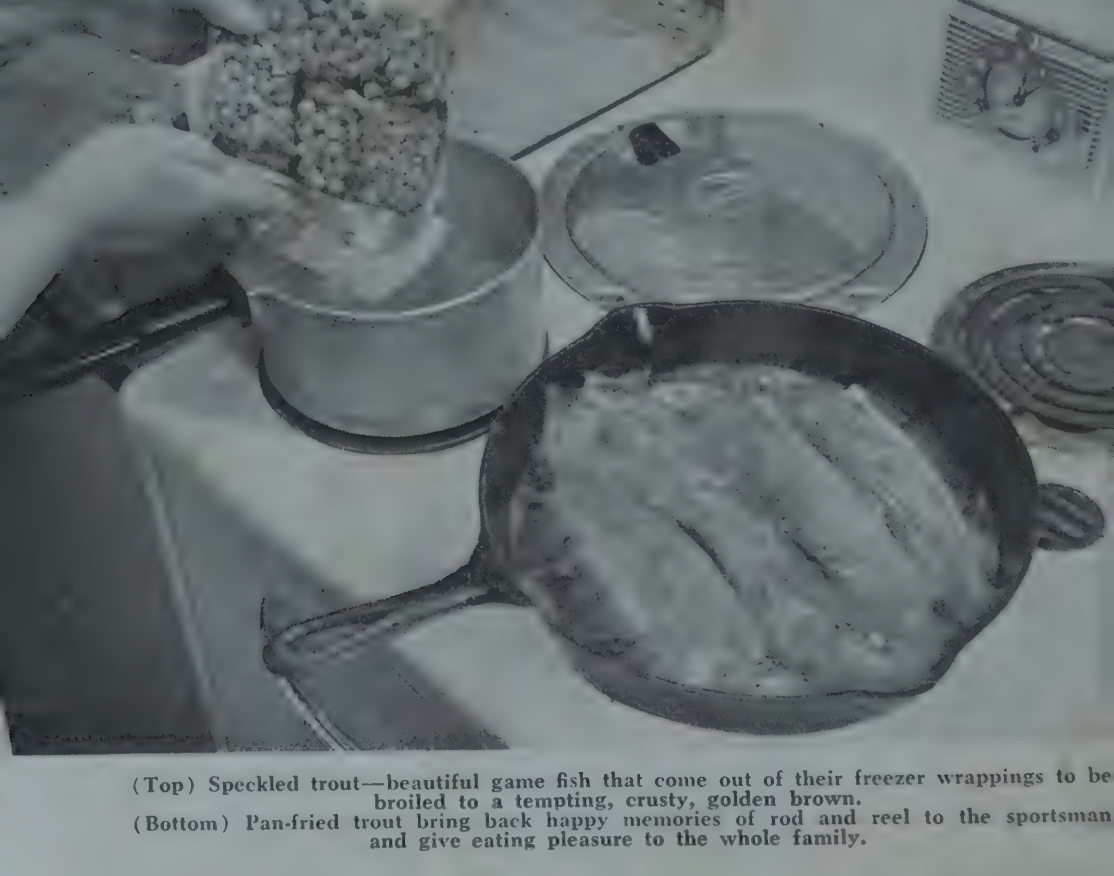
After cleaning, wash fish thoroughly in cold running water. Then let drain a few seconds before wraping for freezing. Fish weighing about one pound or less may be frozen whole.

Wrap each fish separately in moisture-proof Cellophane or any other recommended moisture-proof wrapping. This will prevent the fish from freezing together, and will facilitate thawing as well as easy removal from storage of the quantity needed.

Larger fish such as salmon may be cut into steaks or chunks. After cutting off head, eviscerating, trimming tail and fins, and washing thoroughly, the fish is cut crosswise retaining one backbone vertebra in each steak.

Chunks are cut the same as steaks but in pieces about six inches long suitable for baking. Lean fish (see page 157) steaks or fillets should be dipped in a weak brine solution for a few seconds, then wrapped individually in moisture-proof sheeting.

Pack in carton, overwrapping with moisture-proof paper and heat-sealing. Fish cut into chunks may be packaged the same as a roast. (*Photos, courtesy General Electric Co.*)



(Top) Speckled trout—beautiful game fish that come out of their freezer wrappings to be broiled to a tempting, crusty, golden brown.
(Bottom) Pan-fried trout bring back happy memories of rod and reel to the sportsman and give eating pleasure to the whole family.

The chart on page 215 shows clearly the conventional cuts for a carcass and to what purpose each portion may be put.

Follow the same procedure as for domestic cuts of roasts, steaks or chops, stew meat, ground meat, etc. when wrapping game meats for freezing. (See page 150).

FIELD POINTERS FOR SMALL GAME

A tastier bird will result if properly bled as soon after killing as possible. This can easily be done right in the field by inserting the point of a sharp knife down the throat and severing the main arteries, then letting the bird hang head down for a few minutes to bleed thoroughly.

Bleed small four-footed game as described for large game; eviscerate and skin also in much the same manner.

Recurrent reports are circulated about some hunters not plucking or dressing birds if they are to be consumed within a short time; oftentimes neither are they wrapped properly when stored in a freezer. This is not good practice and will result in inferior game meat. As soon as birds are brought home or back to camp, pluck and dress them as one would any poultry for roasting (described on page 156). To pluck game birds, the wax method is recommended as best: First rough pick the birds dry or semiscald (page 155) and then rough pick; melt down about 2 pounds of paraffin wax, depending upon the quantity of birds to be plucked; dip or roll birds in the melted wax, let stand until wax is set, then peel off wax coating which takes every trace of pin feathers or down off the skin along with it.

CUTTING AND PACKAGING SMALL GAME

Birds which are to be roasted whole are prepared as poultry and packaged as roasts; birds which are quartered or cut up are prepared and packaged as broilers or disjointed poultry. (See pages 156–157.)

Small four-footed game is cut up and packaged the same as cut-up poultry; or halves and quarters may be packaged the same as broilers.

LABELING GAME FOR FREEZER

No matter what the local game storage rulings are, if you are permitted to store game foods it is a wise precaution on the part of the sportsman to label his game food for freezing with as complete information as possible: contents, of course; name, address; hunting or fishing license permit number; date of placing game in storage; and certificate, or certificate number allowing game to be brought into the state if bagged in another state.

FREEZING GAME MEAT

All the freezing rules which apply to the freezing of meat, also apply to the freezing of game meat: freeze as soon as possible except where aging is desired; freeze in small packages (one large roast, one large steak, four chops, etc.) so meat will freeze rapidly; package as carefully as any foods for freezing; maintain storage temperature at 0° F., or below.

POINTERS FOR THE FISHERMAN

Protect fish from exposure to air and warm sun until they can be brought home or to camp. If fish are still alive when caught, they may be strung on a line running through the gill and mouth and then placed back in the water for safe-keeping; if fish are dead, immerse them in clean fresh water, or place them in a well-insulated container with chipped ice. On shipboard this is a comparatively easy thing to do; but for the angler at a stream several miles from habitation, it may be out of the question and his creel may be his only protection against sun and air.

Fish is very perishable and should receive the best possible care until it is wrapped and placed in the freezer for freezing and storage; and this should be done at the very first opportunity, even at the resort or camp if freezing facilities are at all available.

Only the larger fish such as halibut, swordfish, or salmon need not be eviscerated *if* they can be frozen within a very short time after taken from the water. However, for all practical purposes, it is better to prepare them for table use by eviscerating, trimming, and cutting into steaks or chunks before freezing. Besides the convenience of the ready-to-cook food, you save considerable freezing space by eliminating waste before packaging.

It is always more economical of freezer space to prepare fillets, steaks, or chunks from fish weighing over 1 pound. A 4-pound fish yields about $1^1/_2$ pounds of edible food.

But there will be many a prize trout, pike, or bass which should be frozen whole—intact so the angler has proof of his "big fish" stories and can supply same when pressed to the point of either dishonor or exalted integrity. With such medium-sized fish, this can be done. They are then suitable for baking or planking, making their appearance at the table in all their due glory. Eviscerate, wash out cavity thoroughly with fresh cold water, then give the whole fish an ice glaze as is described on page 158. After the protective ice coating has been formed on the whole fish, be sure to wrap it in moistureproof paper to protect the glaze from chipping during storage.

Small fish under 1 pound are also usually left whole—eviscerated, of course, and with head and tail trimmed. These small fish may be given an ice glaze, then packed in a folding waxed carton of suitable size for protection during storage. Or they may be wrapped individually in moistureproof Cellophane, and then packed in the same type of carton which is then overwrapped with the moistureproof Cellophane and heat-sealed.

Never put an ice glaze on fish which have been skinned—only on those fish which are whole where the flesh is not exposed. However, when the fish have scales, they should be scaled before icing or preparing for freezing.

Have you ever thought of a curry comb as a handy gadget for scaling fish? If this task irks or stumps you, buy one at a hardware store that still caters to the horse business.

Medium to small fish are usually made into fillets. Larger fish are cut into steaks for individual servings, or chunks for family servings.

Fillets are made by removing the edible part of the fish from the "skeleton" (backbone, head and tail). With sharp knife, make a cut the length of the fish along the dorsal fin. Then cut down to the backbone at the neck. When the knife reaches the backbone, turn the knife flat and cut the flesh along the bone to the tail, exerting a steady pushing pressure. Lift off the fillet, then turn fish over and around and repeat the operation on the other side. See illustrations.

Sometimes fillets are skinned. To do this, place the fillet on a cutting board with the skin side down. Insert a large-bladed knife between the skin and the flesh; hold the knife steady with the right hand, and with the left pull the skin toward you as you skim the knife along the under side of the skin.

To prepare fish steaks, behead, eviscerate, and trim fins. Then with the backbone toward you, cut sections through the body of the fish from $1^1/_2$ to $1^3/_4$ inches thick, starting from the head and cutting toward the tail. As the tail portion narrows, thicker steaks may be cut or the tail section may be filleted.

Chunks are cut like steaks only in large portions of 4 to 8 inches in thickness, the chunks suitable for baking.

Follow instructions for wrapping fillets, steaks, and chunks given on page 158.

In order to prevent excessive drip when thawing, all lean fish fillets and steaks should be dipped for a few seconds in brine

solution (see page 157 for details) before packaging. These fish include: bass, cod, croaker, flounder, haddock, hake, halibut, mullet, perch, pollock, pompano, porgy, red grouper, red snapper, rockfish, sablefish (black cod), sheepshead, sole, sturgeon, swordfish, tomcod, tuna, weakfish, whiting, and fresh water perch, trout, bass, pickerel, pike, bluegills (sunfish), buffalo, carp, sucker. Those which do not need the brine treatment include: alewives, bluefish (in the fall of the year), butterfish, herring, mackerel, shad, eel, salmon, smelt, turbot, catfish (bullheads).

FREEZING FROG LEGS

In many localities, where frogs are plentiful in the spring, the home freezer owner may wish to freeze some for later use. The large bullfrogs are the kind usually frozen, although the smaller spotted leopard or meadow frogs, and the small pickerel frogs are equally delicious.

Preparing frog legs for freezing is simple. Merely cut off the hind legs in pairs (sometimes called saddles), skin, wash in cold water, drain, then wrap each pair individually in moistureproof Cellophane or some other equally moistureproof sheeting, and pack into shallow cartons, preferably the heavily paraffined, rectangular type, or wrap about four of the Cellophane wrapped pairs in "locker paper." Freeze immediately.

WHEN GAME COMES OUT OF THE FREEZER

All game fish, birds, and meat are thawed the same as domestic fish, poultry, and meat for cooking purposes (p. 188). Here the similarity to treating game foods as ordinary domestic foods often ends because each hunter and fisherman revels in his own pet theories for bringing out epicurean flavors by cooking game with sauces, seasonings, or wine for exotic and wonderful flavors.

Since one of the sportsman's delights is to discover new and different ways to serve up his choice morsels, here is our contribution to enlarging his knowledge of methods of cooking game:

Venison Cutlets in Sour Cream Gravy

2 pounds venison steak, thawed
1/2 cup sour cream
Salt and pepper
Bay leaf
2 tablespoons butter
Flour
Celery salt
Worcestershire sauce

Cut completely defrosted venison into individual cutlets; roll in well-seasoned flour; place in heavy skillet with melted butter; brown venison on both sides over medium heat. When venison is nicely browned, pour the sour cream over the meat and season with salt, pepper, Worchestershire sauce, bay leaf and celery salt. Place cover on skillet and cook over low heat until tender, about 1 hour. Yield: Serves 6 to 8.

Frog Legs Sauté

2 pounds of small or medium frogs legs, defrosted
1/2 cup milk
1/2 cup flour
Melted butter or margarine, or salad oil
2 teaspoons lemon juice
Salt and pepper to taste
Chopped parsley (from freezer)

Soak frogs' legs in cold water for 1 hour; dip in milk, then in flour. Saute to a golden brown in 1/4 inch of melted fat or salad oil. Remove to a hot platter, season to taste, and sprinkle with lemon juice. Pour fat from skillet. Heat butter over low flame until brown—pour over frogs' legs. Garnish with chopped parsley. Decorate platter with sliced cucumbers, radish roses, and lemon slices. Serves 4.

Burgundy Bear Stew

2 1/2 pounds lean bear meat, defrosted
1/4 pound lean salt pork, cubed
1 tablespoon butter
1 clove of garlic, chopped fine
1 small bay leaf
Pinch of thyme
2 cups dry red wine

Cut the defrosted bear meat into 1 1/2 inch cubes and roll in seasoned flour. Cook cubes of salt pork over low heat in heavy skillet to render fat. Discard the cracklings, then add the pieces of meat and the butter. Brown the meat well on all sides. Add dry red wine, chopped garlic, bay leaf, and thyme. Bring wine just to boiling point, reduce heat, and cover. Gently simmer for 3 1/2 to 4 hours, or until meat is tender. Add more wine during cooking period if needed. Add small white onions and 2 to 3 sliced carrots 1/2 hour before serving. Season to taste. Serve hot. Yield: Serves 8.

Rabbit à l'Estragon

1 defrosted rabbit cut into serving pieces
Seasoned flour
1/4 pound butter or margarine
2/3 cup dry white wine
2 tablespoons fresh tarragon (or 1 teaspoon dried tarragon soaked in 1/4 cup white wine)

Roll pieces of rabbit in seasoned flour. Melt shortening in heavy skillet and brown rabbit quickly on all sides to a golden brown. Reduce heat, add dry white wine and gently simmer for about 45 minutes, or until rabbit is tender. Now add tarragon, turn meat to evenly distribute the herb, and cook for another 5 minutes. Serve on bed of hot rice. Yield: Serves 4.

Squirrel en Casserole

1 partially thawed squirrel cut in serving pieces
Seasoned flour (add pinch of thyme)
6 thinly sliced onions
3 cups boiling water
2 cups canned tomatoes
3 chopped red peppers (optional)
1 pint defrosted lima beans
1 pint defrosted cut corn
1 pint defrosted okra
chopped parsley
1 tablespoon Worcestershire sauce

Dredge pieces of game in well-seasoned flour and brown in fat, with onions. Then place meat and onions in casserole. Add boiling water, tomatoes, and peppers. Cover and stew gently over low flame for 1 hour. Now add the rest of the ingredients, cover casserole again, and simmer until meat and vegetables are tender. Thicken the gravy slightly. Yield: Serves 4 generously.

Epicurean Duckling

3 defrosted wild ducklings (split in half)
1 1/2 cups white wine
2 large bay leaves
3 whole cloves
6 sprigs of fresh chopped parsley
1 sprig of chopped celery tops
6 peppercorns
Pinch of dried tarragon
Dash of thyme, nutmeg, and mace
1/2 cup melted butter
1 cup dry bread crumbs

Combine white wine, bay leaf, cloves, parsley, celery tops, peppercorns, with herbs and spices. Marinate defrosted wild duck halves in wine over night in refrigerator. To cook: drain ducks, brush with melted butter, dip in dry bread crumbs. Broil the birds 3 inches from heat until brown, baste often with melted butter. Test with fork to insure doneness. Serve with sauce and garnish as desired. Yield: Serves 6.

Peppered Woodcock

4 defrosted woodcock
Coarsely ground black pepper
Curry powder
Melted bacon fat

Blend equal parts of pepper and curry. Brush woodcock generously with melted fat, then rub liberally with pepper-curry mixture. Broil 3 inches from flame until tender and deep brown. Baste with fat while broiling. Sprinkle with peppered curry before serving. Yield: Serves 4.

Baked Trout

6 partially defrosted brook trout
3 tablespoons chopped mushrooms
1 teaspoon each of chopped parsley, onions, chives
2 tablespoons melted butter
4 well-beaten egg yolks
3 tablespoons brandy
5 tablespoons grated Swiss cheese
5 tablespoons bread crumbs

Salt and pepper defrosted trout to taste. Place chopped parsley, onions, chives and mushrooms in bottom of well-greased baking dish. Place trout on top and sprinkle with melted butter. Cover dish with a buttered paper and cook for 10 minutes at 450° F. Remove paper and pour well-blended brandy and egg mixture over the trout. Top with cheese and bread crumb mixture. Return to oven to brown crumbs and set the eggs. Serve piping hot. Yield: Serves 6.

Courtbouillon Bonfouca

1 large red snapper (or red) fish
3 sprigs thyme
1 bay leaf
1 clove garlic
1 quart water
Salt, cayenne or pepper to taste
3 tablespoons butter
1 tablespoon Worcestershire sauce
1/2 dozen allspice, mashed
6 sprigs parsley
1 large onion
6 large fresh tomatoes
Juice of 1 lemon
3 tablespoons flour
1 cup claret wine
1/2 cup olive oil

If the fish is frozen whole, thaw completely and cut it into steaks. Put head and tail (or one small piece of the fish) in sauce pan and add 1 pint of the water, onion, garlic, bay leaf, and tomatoes and boil until mixture is cooked down, then remove head and tail if these were used. Pour olive oil into deep skillet; add the fish steaks, the liquid from the cooked head, and the remaining pint of water. Meanwhile, melt butter and add flour, stirring to a smooth paste; then stir into fish mixture. Add the claret and Worcestershire sauce to fish mixture and simmer over low heat until fish is tender. Yield: Serves 6.

Bass in White Wine

Place 6 partially defrosted bass fillets (about $^1/_2$ pound each) in a well-oiled shallow baking dish. Sprinkle 1 tablespoon of finely minced spring onions over fish, then barely cover with dry white wine. Dot generously with butter or margarine and season to taste. Cut brown wrapping paper to fit size of baking dish and butter one side of paper, place over fish, then cover baking dish tightly. Bake 15 minutes at 350° F. Remove lid and paper and add 1 teaspoon of flour blended with 1 scant tablespoon of butter. Re-cover and bake another 10 minutes. Garnish with chopped parsley or chives. Serve in baking dish.

Appendix

A Partial List of State and Federal Publications Covering the Home Freezing of Foods*

Alabama

Curtis, L. 1944.
Preparing vegetables and fruits for freezing.
Ala. Polytech. Inst. Agr. Ext. Cir. 275.

Arizona

Lincoln, R. 1946.
Arizona varieties for freezing.
Univ. Arizona Agr. Ext. Serv. Folder 46.

Arkansas

Farris, W. S. 1946.
Operation of Arkansas frozen food locker plants.
Univ. Ark. Bul., Res. Ser. No. 6.

California

Joslyn, M. A., and Hohl, L. A. 1948.
The commercial freezing of fruit products.
Calif. Agr. Expt. Sta. Bul. 703.

Mrak, V. G. 1953.
Home freezing of foods. How to prepare, store, thaw and cook frozen foods.
Univ. Calif. Agr. Ext. Serv. Cir. 420.

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* Agricultural Experiment Stations and the State Extension Service through the cooperation of the U. S. Department of Agriculture, are permitted to make free distribution of their publications to residents of the state in which these institutions are located. It is therefore suggested that you not attempt to obtain free bulletins from a state other than your own, since to request same will merely overtax the limited budget under which these institutions operate.

Mrak, V. G., and Stewart, G. F. 1947.
Freezing poultry for home use.
Univ. Calif. Agr. Ext. Serv. Bul. HD500.

Tavernetti, J. R. 1948.
Construction of farm refrigerators and freezers.
Univ. Calif. Agr. Expt. Sta. Cir. 387.

Colorado

Stanek, M. 1952.
Freezing fruits and vegetables.
Colo. A. and M. Col. Agr. Ext. Serv. Bul. 409A.

Connecticut

Czajkowski, J. M. 1952.
Freezing pre-cooked and prepared foods.
Univ. Conn. Agr. Ext. Serv. Pub. Oct.

Delaware

Holloway, M. G. 1953.
Freezing cooked foods.
Univ. Del. Agr. Ext. Mimeo. Cir. 85.

Florida

Stout, G. J. 1948.
Freezing fruits and vegetables on Florida farms.
Fla. Agr. Expt. Sta. Bul. 441.

Georgia

Woodroof, J. G., and Shelor, E. 1951.
Home freezers and home freezing.
Ga. Expt. Sta. Bul. 266.

Idaho

Kraus, J. E., Franklin, D. F., and Horn, A. S. 1949.
Vegetable varieties for Idaho gardens.
Univ. Idaho Agr. Ext. Div. Cir. 102.

Lehrer, W. P. Jr., and Kraus, J. E. 1949.
Freezing foods for use in the home.
Univ. Idaho Agr. Ext. Div. Bul. 165. Rev.

Illinois

Owen, R. F., Chase, J. T., and Van Duyne, F. O. 1951.
Freezing cooked and prepared foods.
Univ. Ill. Agr. Ext. Serv. Cir. 618.

Van Duyne, F. O. 1950.
How to prepare fruits and vegetables for freezing with suggestions for choosing suitable varieties.
Univ. Ill. Agr. Ext. Serv. Cir. 602.

Indiana

Isaacs, G. W., and Redfield, G. M. 1951.
Hints on using home freezers.
Purdue Univ. Agr. Ext. Leaflet 331.

Oberhelman, L. 1952.
Freezing farm foods.
Purdue Univ. Agr. Ext. Bul. 308.

Iowa

Graham, J. 1952.
Freezing fruits, vegetables, and prepared foods.
Iowa State Col. Agr. Ext. Serv. Pub. HE 23.

Kansas

Filinger, G. A. 1945.
Preserving food in home frozen food cabinets.
Kans. Agr. Expt. Sta. Cir. 230.

Mackintosh, D. L., Vail, G. E., and Filinger, G. A. 1949.
Preserving foods by freezing.
Kans. State Col. Agr. Expt. Sta. Cir. 249.

Kentucky

Anon. 1952.
Storing foods in freezer lockers; suggestions for preparation, packing, freezing, thawing, cooking.
Ky. Agr. Col. Ext. Cir. 398.

Louisiana

Anon. 1952.

Louisiana home garden planting guide.
La. State Univ. Agr. Ext. Pub. 1044.

Fournet, E. 1952.
Preparing foods for freezing at home.
La. State Univ. Agr. Ext. Pub. 1014.

Maine

Briwa, K. E. 1952.
Preparing foods for the home freezer.
Univ. Maine Ext. Serv. Bul. 420.

Maryland

Duncan, A. A. 1953.
Maryland vegetable varieties for 1953 for planting and freezing.
Univ. Md. Ext. Serv. Fact Sheet 1.

Massachusetts

Esselen, W. B., Lawler, K. M., and Fellers, C. R. 1950.
Home freezing in Massachusetts.
Univ. Mass. Agr. Expt. Sta. Bul. 437.

Foley, M. E., and Hayes, K. M. 1951.
How to freeze cooked or prepared foods.
Univ. Mass. Ext. Serv. Leaflet 254.

Hayes, K. M., Esselen, Jr., W. B., and Fellers, C. R. 1952.
Freezing foods at home.
Univ. Mass. Ext. Serv. Leaflet 257.

Michigan

Anon. 1948.
Preservation of meats and poultry products in frozen food lockers.
Mich. State Col. Ext. Serv. Bul. 223.

Paul, P. et al. 1950.
Freezing foods for Michigan homes.
Mich. State Col. Agr. Expt. Sta. Cir. Bul. 216.

Paul, P., Wiant, D. E., and Robertson, W. F. 1949.
Freezing temperatures and length of frozen storage for foods frozen in household freezers.
Mich. State Col. Agr. Expt. Sta. Tech. Bul. 213.

Minnesota

Brill, G. D. 1951.
Freezing fruits and vegetables.
Univ. Minn. Agr. Ext. Serv. Folder 156.

Winter, J. D., Hustrulid, A., Trantanella, S., and Aunan, W. J. 1952.
Freezing foods for home use.
Univ. Minn. Agr. Ext. Serv. Bul. 244. Rev.

Mississippi

Felder, A. P., Boyette, G., Hines, C. Buckley, K. H. Yount, P., and Richmond, W. L. 1952.
Freezing foods.
Miss. State Col. Agr. Ext. Serv. Pub. 176.

Missouri

Carl, F. L., and Flory, J. 1950.
Freezing fruits and vegetables.
Univ. Mo. Agr. Ext. Serv. Cir. 584.

Carl, F. L., Flory, J., and Brady, D. E. 1950.
Freezing meat, fish and poultry for family meals.
Univ. Mo. Agr. Ext. Serv. Cir. 580.

Funk, E. M., and Bowman, F. 1947.
Preparing frying chickens for locker storage.
Univ. Mo. Agr. Expt. Sta. Bul. 503.

McKinsey, J. W. 1951.
What Missourians think of frozen food storage.
Univ. Mo. Agr. Expt. Sta. Bul. 558.

Montana

Loughead, M. E. 1951.
Home freezing fruits and vegetables.
Mont. State Col. Ext. Serv. Cir. 207. Rev.

Nebraska

Doremus, M., and Stanek, M. 1948.
Food preservation by freezing.
Nebr. Agr. Col. Ext. Cir. 9965.

New Jersey

Maclinn, W. A., and Doermann, M. C. 1948.
Frozen foods.
Rutgers Univ. Agr. Ext. Serv. Bul. 249.

New Mexico

Lantz, E. 1952.
The suitability of different varieties of New Mexico peaches for freezing.
New Mexico Col. A. and M. Arts. Agr. Expt. Sta. Press Bul. 1060.

New York

Fenton, F. 1951.
Foods from the freezer. Precooked or prepared.
Cornell Ext. Bul. 692. Rev.

Fenton, F. 1953.
Cooking frozen vegetables and fruits.
Cornell Ext. Bul. 873.

Masterman, N. K., and Lee, F. A. 1951.
The home freezing of farm products.
Cornell Ext. Bul. 611. Rev.

North Carolina

Anon. 1953.
Freezing foods for the home.
N. C. State Col. Agr. Eng. Ext. Cir. 280. Rev.

North Dakota

Dawson, R. M. 1951.
Have a plan for vegetable preservation.
N. Dak. Agr. Col. Ext. Serv. Cir. A-160.

Dawson, R. M. 1951.
Have a plan for fruit preservation.
N. Dak. Agr. Col. Ext. Serv. Cir. A-161.

Dawson, R. M., and Mork, I. J. 1951.
How to preserve chickens, turkeys, ducks, game birds by canning and freezing.
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NOTE: The Fish and Wildlife Service of the U. S. Dept. of Interior, Washington, D. C., publishes lists of the firm names and addresses of the locker plants in your state. An up-to-date list may be obtained from that Bureau.

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